

**TOSHIBA**

FILE NO. 030-200112

SERVICE MANUAL

COLOUR TELEVISION

Z13B Chassis

***32Z13B, 32Z13G***

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### APPENDIX:

#### CIRCUIT DIAGRAM

### SAFETY INSTRUCTIONS

**WARNING:** BEFORE SERVICING THIS CHASSIS, READ THE “X-RAY RADIATION PRECAUTION”, “SAFETY PRECAUTION” AND “PRODUCT SAFETY NOTICE” INSTRUCTIONS BELOW.

#### X-RAY RADIATION PRECAUTION

1. Excessive high voltage can produce potentially hazardous X-RAY RADIATION. To avoid such hazards, the high voltage must not be above the specified limit. The nominal value of the high voltage of this receiver is (A) kV at zero beam current (minimum brightness) under a (C) V AC power source. The high voltage must not, under any circumstances, exceed (B) kV.
2. The only source of X-RAY RADIATION in this TV receiver is the picture tube. For continued X-RAY RADIATION protection, the replacement tube must be exactly the same type tube as specified in the parts list.
3. Some part in this receiver have special safety-related characteristics for X-RAY RADIATION protection. For continued safety, parts replacement should be undertaken only after referring to the PRODUCT SAFETY NOTICE below.

Refer to table-1 for high voltage (A), (B) & AC voltage (C).  
(See SETTING & ADJUSTING DATA on page 18)

Each time a receiver requires servicing, the high voltage should be checked following the HIGH VOLTAGE CHECK procedure in this manual. It is recommended that the reading of the high voltage be recorded as a part of the service record. It is important to use an accurate and reliable high voltage meter.

#### SAFETY PRECAUTION

**WARNING :** Service should not be attempted by anyone unfamiliar with the necessary precautions on this receiver. The following are the necessary precautions to be observed before servicing this chassis.

1. An isolation transformer should be connected in the power line between the receiver and the AC line before any service is performed on the receiver.
2. Always discharge the picture tube anode to the CRT conductive coating before handling the picture tube. The picture tube is highly evacuated and if broken, glass fragments will be violently expelled. Use shatter proof goggles and keep picture tube away from the unprotected body while handling.
3. When replacing a chassis in the cabinet, always be certain that all the protective devices are put back in place, such as; non-metallic control knobs, insulating covers, shields, isolation resistor-capacitor network etc.

#### PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These characteristics are often passed unnoticed by a visual inspection and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this manual and its supplements; electrical components having such features are identified by the international hazard symbols on the schematic diagram and the parts list.

Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts which do not have the same safety characteristics as specified in the parts list may create shock, fire, X-ray radiation or other hazards.

**WARNING:** BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION", "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" ON PAGE 3 OF THIS MANUAL.

## SET-UP ADJUSTMENT

- The following adjustments should be made when a complete realignment is required or a new picture tube is installed. Perform the adjustments in order as follows :

1. Color Purity
2. Convergence
3. White Balance

Note: The PURITY/CONVERGENCE MAGNET assembly and rubber wedges need mechanical positioning.

Refer to figure 1.

Mounting position of the purity magnet assembly should fit to same position as old one because slightly difference to the position depend on a kind of tube.

- \* There are no adjustment of purity and convergence in some picture tube (Unified with purity magnet)

### COLOR PURITY ADJUSTMENT

NOTE : Before attempting any purity adjustments, the receiver should be operated for at least fifteen minutes.

1. Demagnetize the picture tube and cabinet using a degaussing coil.
2. Set the brightness and contrast to maximum.
3. Use a green raster from among the built-in test signals.
4. Loosen the clamp screw holding the yoke and slide the yoke backward or forward to provide vertical green belt (zone) in the picture screen.

5. Remove the Rubber Wedges.

6. Rotate and spread the tabs of the purity magnet (See figure 2.) around the neck of the picture tube until the green belt is in the center of the screen. At the same time, enter the raster vertically.

7. Slowly move the yoke forward or backward until a uniform green screen is obtained. Tighten the clamp screw of the yoke temporarily.

8. Check the purity of the red and blue raster.

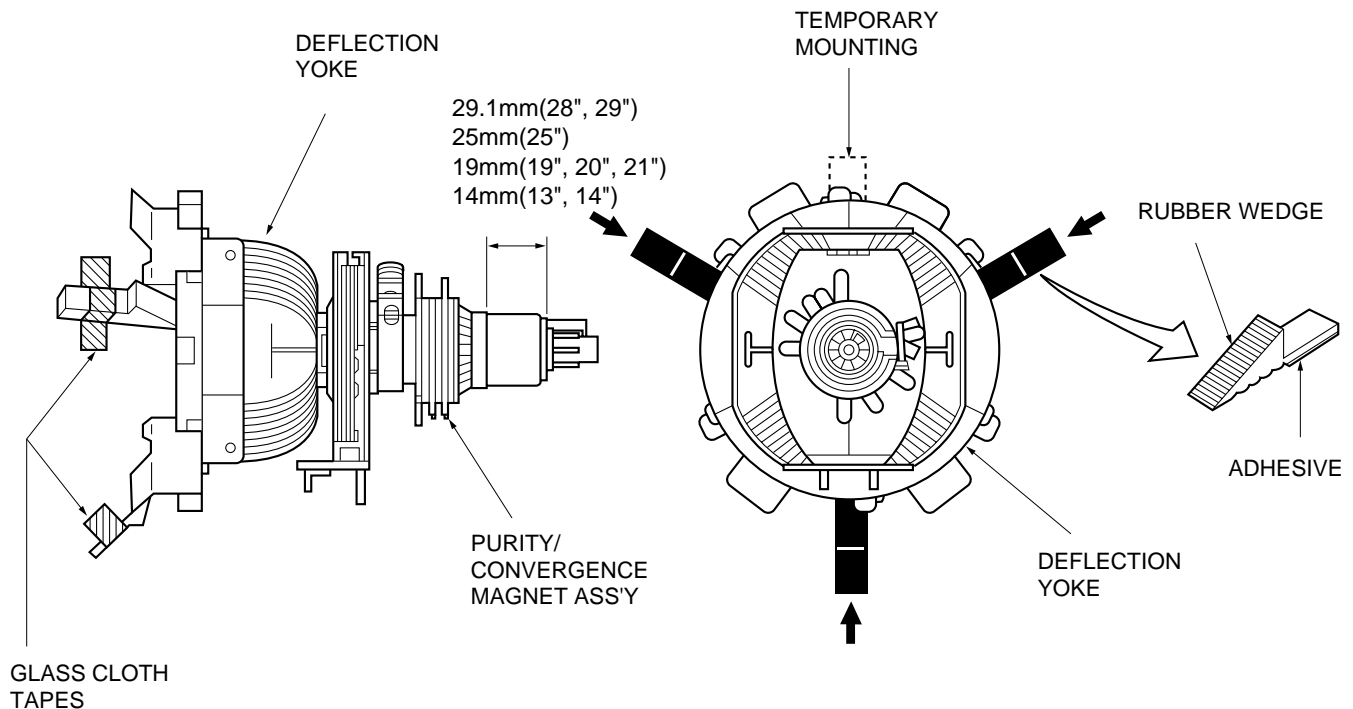


Figure 1.

## CONVERGENCE ADJUSTMENTS

NOTE: Before attempting any convergence adjustments, the receiver should be operated for at least fifteen minutes.

### ■ CENTER CONVERGENCE ADJUSTMENT

1. Use the cross-dot pattern from among the built-in test signals.
2. Set the brightness and contrast for well defined pattern.
3. Adjust two tabs of the 4-Pole Magnets to change the angle between them (See figure 2.) and superimpose red and blue vertical lines in the center area of the picture screen.
4. Turn the both tabs at the same time keeping the angle constant to superimpose red and blue horizontal lines at the center of the screen.
5. Adjust two tabs of 6-Pole Magnets to superimpose red/blue line and green one. Adjusting the angle affects the vertical lines and rotating both magnets affects the horizontal lines.
6. Repeat adjustments 3, 4, 5 keeping in mind red, green and blue movement, because 4-Pole Magnets and 6-Pole Magnets have mutual interaction and make dot movement complex.

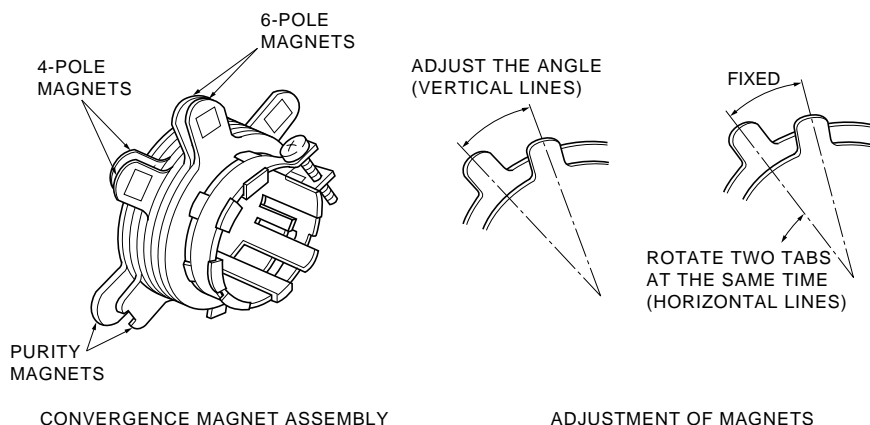
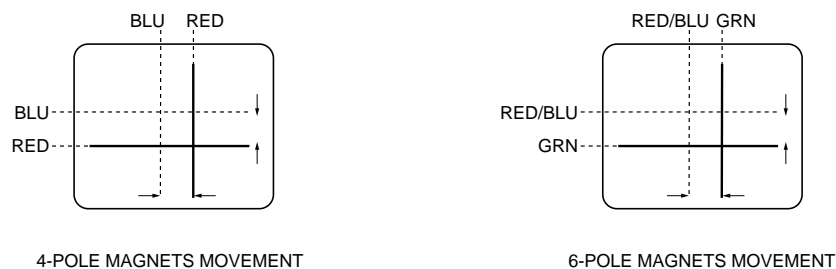


Figure 2.



Center Convergence by Convergence Magnets






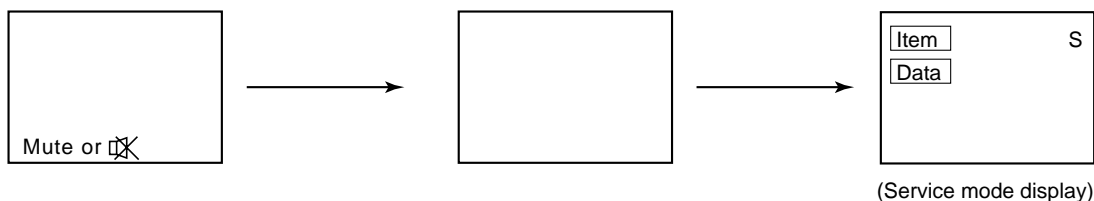
Circumference Convergence by DEF Yoke

Figure 3. Dot Movement Pattern

## SERVICE MODE

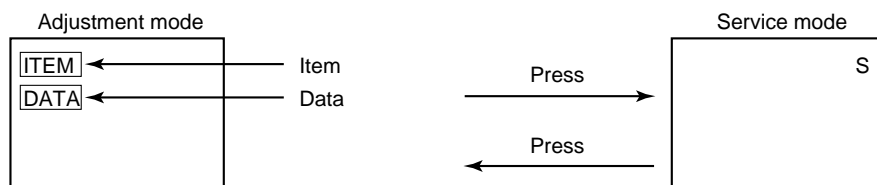
### 1. ENTERING TO SERVICE MODE

- 1) Press  button once on Remote Control.
- 2) Press  button again to keep pressing.
- 3) While pressing the  button, press MENU button on TV set.



### 2. DISPLAYING THE ADJUSTMENT MENU

- 1) Press MENU button on TV.



### 3. KEY FUNCTION IN THE SERVICE MODE

The following key entry during display of adjustment menu provides special functions.

A single horizontal line ON/OFF:

Test signal selection :

Selection of the adjustment items :

Change of the data value :

Adjustment menu mode ON/OFF :

Initialization of the memory (QA02) :

Reset the count of operating protect circuit to "00":

"RCUT" selection :

"GCUT" selection :

"BCUT" selection :


"CNTX" (or "SCNT") selection :



"COLC" selection :


"TNTC" selection :

Self diagnostic display ON/OFF :

INFO button (on Remote) or  button (on TV)

 button (on Remote)

Channel / (on TV or Remote)

Volume  +/- (on TV or Remote)

MENU button (on TV)

CALL + Channel button on TV ()

CALL + Channel button on TV ()

1 button

2 button

3 button

4 button

5 button - - - - Color thickness correction

6 button

9 button

note: Displayed differently as shown below, depending on the setting of the receiving color system.

COLP (PAL)

COLC (NTSC)

COLS (SECAM)

**CAUTION :** Never try to perform initialization unless you have changed the memory IC.

#### 4. SELECTING THE ADJUSTING ITEMS

- 1) Every pressing of CHANNEL ▲ button in the service mode changes the adjustment items in the order of table-2.  
(▼ button for reverse order)

Refer to table-2 for preset data of adjustment mode.  
(See SETTING & ADJUSTING DATA on page 18)

#### 5. ADJUSTING THE DATA

- 1) Pressing of VOLUME ▲/▼ button will change the value of data in the range from 00H to FFH. The variable range depends on the adjusting item.

#### 6. EXIT FROM SERVICE MODE

- 1) Pressing POWER button to turn off the TV once.

#### ■ INITIALIZATION OF MEMORY DATA OF QA02

After replacing QA02, the following initialization is required.

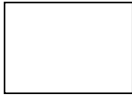
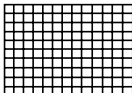
1. Enter the service mode, then select any register item.
2. Press and hold the CALL button on the Remote, then press the CHANNEL ▲ button on the TV. The initialization of QA02 has been completed.
3. Check the picture carefully. If necessary, adjust any adjustment item above.  
Perform "Auto search Memory" on the owner's manual.

CAUTION: Never attempt to initialize the data unless QA02 has been replaced.

#### 7. TEST SIGNAL SELECTION

- 1) Every pressing of -⊖ button on the Remote Control changes the built-in test patterns on screen as described below in SERVICE MODE.

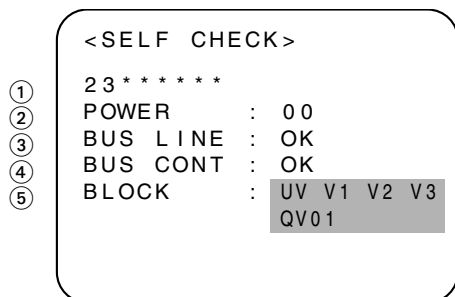
Signal off —→ NTSC signals (5 patterns)  
 ↑ PAL signals (5 patterns) ←

Signals	Picture
<ul style="list-style-type: none"> <li>• Red raster</li> <li>• Green raster</li> <li>• Blue raster</li> <li>• All White</li> </ul>	
<ul style="list-style-type: none"> <li>• Black cross-hatch</li> </ul>	

\* The signals marked with ■ are not usable to display in the Test signal for some model.

## 8. SELF DIAGNOSTIC FUNCTION

- 1) Press "9" button on Remote Control during display of adjustment menu in the service mode.  
The diagnosis will begin to check if interface among IC's are executed properly.
- 2) During diagnosis, the following displays are shown.



- ① Part number of microcomputer (QA01)
- ② Operation number of protecting circuit ----"00" is normal.  
When indication is other than "00", overcurrent appts to flow, and circuit parts may possibly be damaged.
- ③ BUS LINE CHECK ----"OK" is normal.  
"SDA1-GND" ----- SDA-GND short circuit.  
"SCL1-GND" ----- SCL-GND short circuit.  
"SCL1-SDA1" ----- SCL-SDA short circuit.
- ④ BUS CONT ----"OK" is normal.  
When indication shows "Q ○○○ NG", the device with the number may possibly be damaged.
- ⑤ BLOCK  
UV : TV reception mode  
V1 : VIDEO 1 input mode (→1)  
V2 : VIDEO 2 input mode (→2)  
V3 : VIDEO 3 input mode (→3)

Indicated color of mode now selected : Green and Red  
Indicated color of other modes : White

Green : Normal

Red : The microcomputer operates to provide judgement of no video signal. The red color is still indicated though the signal is input, failure may exist in input signal line including QV01.

QV01 : In case of indication green ---Normal  
In case of indication red with input signal---  
Failure may exist in output line including QV01.

**NOTE:** Component which controls character display on screen is ICF01 (QT01) (TELETEXT IC.). If this display function fails to operate due to damage in ICF01 (QT01), self diagnosis procedure is as follows.


- (1) In case that power indicator is blinking with interval of 0.5 seconds; it means protecting circuit (Current limiter) is operating, and circuit components may possibly be damaged. Check related components.
- (2) In case that power indicator is blinking with interval of 1 second; Protecting circuit does not operate, but a part of Bus line does not operate normally. Check Bus line.

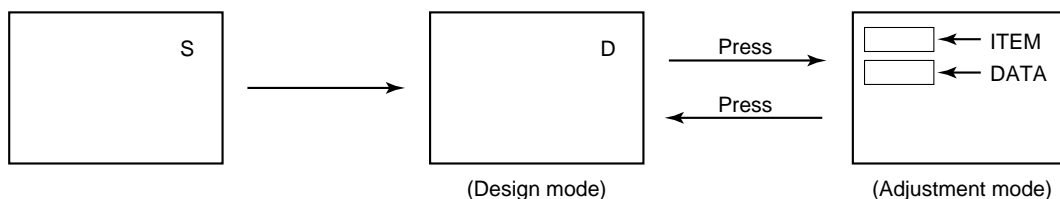
\* The items marked with ■ are not usable to display in the SELF DIAGNOSTIC FUNCTION for some model.



## DESIGN MODE

### 1. ENTERING TO DESIGN MODE

- 1) Select the Service mode.
- 2) While pressing  or CALL button on Remote and press MENU button on TV.
- 3) Press MENU button on TV.



When QA02 is initialized, items “OPT0”, “OPT1” and “OPT2” of DESIGN MODE are set to the data of the representative model of this chassis family.

Therefore, because ON-SCREEN specification remains in the state of the representative of model. This model is required to reset the data of items “OPT0”, “OPT1” and “OPT2”.

### 2. SELECTING THE ADJUSTING ITEMS

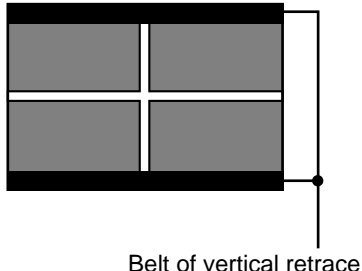
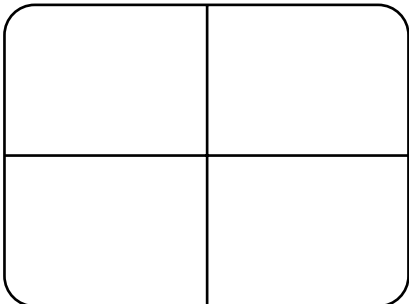
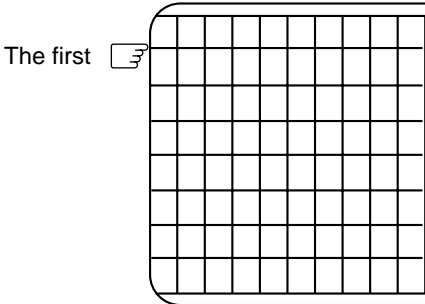
Every pressing of CHANNEL ▼ button in the design mode changes the adjustment items in the order of table-3. (▲ button for reverse order)




Refer to table-3 for data of design mode.  
(See SETTING & ADJUSTING DATA on page 18)

### 3. ADJUSTING THE DATA

Pressing of VOLUME ▲ or ▼ button will change the value of data.

## ELECTRICAL ADJUSTMENTS

ITEM	ADJUSTMENT PROCEDURE
FOCUS VR ADJ	<ol style="list-style-type: none"> <li>1. Enter the service mode, then select any register item.</li> <li>2. Press the TV/VIDEO button on the Remote until the black cross-bar pattern appears on the screen.</li> <li>3. Adjust the FOCUS control (on T461) for well defined scanning lines on the picture screen.</li> </ol>
SUB-BRIGHTNESS (BRTC)  Note: Constrict the picture height until the vertical retrace line appears adjusting the item HIT (HEIGHT).	<ol style="list-style-type: none"> <li>1. Set CONTRAST to minimum, and BRIGHTNESS to center by adjusting user controls.</li> <li>2. Set the TV in service mode to get cross-bar of inside pattern.</li> <li>3. Select BRTC (brightness correction), and adjust the <math>\triangle</math> - /+ button to reduce the value so that white portion of inside pattern slightly light.</li> <li>4. Adjust <math>\triangle</math> - /+ button to increase the data value of BRTC, and set it just before the difference between the belt of vertical retrace and the border of black portion of inside pattern is visible. After that, return vertical height and contrast.</li> </ol> 
HORIZONTAL POSITION ADJUSTMENT (HPOS)  VERTICAL POSITION ADJUSTMENT (VPOS)	<ol style="list-style-type: none"> <li>1. Set the TV in service mode, and get black cross-bar signal with VIDEO button on remote hand unit.</li> <li>2. Select either HPOS (Horizontal picture phase) or VPOS (Vertical picture phase) with CHANNEL <math>\blacktriangle</math>, <math>\blacktriangledown</math> buttons, and adjust horizontal or vertical picture position in the center of screen with VOLUME <math>\triangle</math> - /+ buttons.</li> </ol> 
VERTICAL AMPLITUDE ADJUSTMENT (HIT)	<ol style="list-style-type: none"> <li>1. Set the TV in service mode, and get black cross-hatch signal with VIDEO button on remote hand unit.</li> <li>2. Select HIT (Vertical amplitude) with CHANNEL <math>\blacktriangle</math>, <math>\blacktriangledown</math> buttons, and adjust vertical amplitude with VOLUME <math>\triangle</math> - /+ buttons so that vertical amplitude lacks a little.</li> <li>3. Adjust vertical amplitude with VOLUME <math>\triangle</math> - /+ buttons so that the first bar on cross-hatch signal touches edge of screen.</li> </ol> 

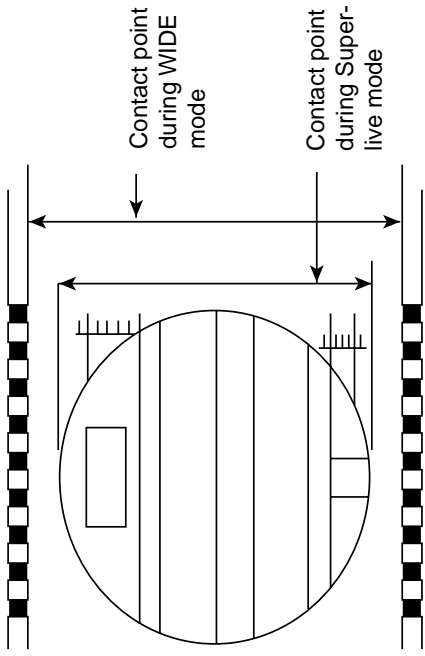
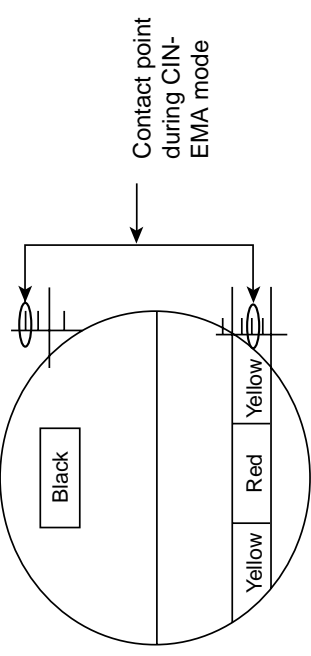
ITEM	ADJUSTMENT PROCEDURE
<p>WHITE BALANCE ADJUSTMENT</p> <ul style="list-style-type: none"> <li>● CUTOFF ADJUSTMENT (RCUT) (GCUT) (BCUT)</li> <li>● DRIVE ADJUSTMENT (GDRV) (BDRV)</li> </ul>	<ol style="list-style-type: none"> <li>1. Set Contrast to 40, and brightness to +20 by picture control.</li> <li>2. Receive the Black and White pattern.</li> <li>3. Select RCUT, GCUT and BCUT with CHANNEL ▲, ▼ buttons, to set individual values to Initial reference data, and to set GDRV and BDRV to Initial reference data with VOLUME ▲ – /+ buttons (See page 18).</li> <li>4. Press  button on the remote control and rotate Screen VR to get one slight horizontal line on screen. Note: Every pressing of  button provides Horizontal line picture and Normal picture alternately.</li> <li>5. Press  button to release horizontal line picture, and select the two other colors which did not light in the above step with CHANNEL ▲, ▼ buttons. Then tap VOLUME ▲ – /+ buttons so that three colors slightly light in the same level.</li> </ol> <p>※ To correct white balance in light area, select GDRV and BDRV with CHANNEL ▲, ▼ buttons to adjust.</p> <p>※ To correct white balance in dark area, perform fine adjustment of RCUT, GCUT and BCUT.</p> <div data-bbox="1005 590 1409 892" style="border: 1px solid black; border-radius: 10px; padding: 10px; margin-top: 20px;"> <div data-bbox="1076 590 1344 678" style="border: 1px solid black; padding: 5px; text-align: center;">Light area check (to show white)</div> <div data-bbox="1118 821 1300 877" style="text-align: center;">Dark area check (to show black)</div> </div>

(Reference Factory Adjustments)

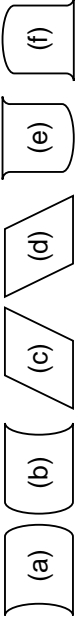
Items	Names	Settings	Input signals	Measuring points	Adjusting methods	Adjusting standards
VCO	VCO	N/A	NO need	Usual case OSD Check  Rare case TP16 or Q501 #55 pin	Put set into Service mode Check OSD if it is "COIL OK". If OSD is "COIL NG" continue next action. Send AFT adj code by HHU command. With data displayed on screen press "0" on HHU (This is code 40 BF F6) Connect a volt-meter to pin 55 of the Q501. Then adjust the L161.	In case of "COIL OK" N/A IC Auto Adjust In case of "COIL NG" Voltage of pin 55 2.5±1V
AGC	AGC	N/A	CW@38.9 Mhz 0% modulation 100dBuV Level  Factory Gen 206A Set polarity reverse Set system to WG	OSD Check	A) Open IF and AGC solder pads Apply input signal Put set into S mode Send AGC code 40 BF F7  Wait for OSD display to change to "AGC OK"  B) or Feed-in the colour Bar Signal with sound (RF 90dBuV) Adjust AGC Bus data so as to get the good S/N picture and no inter modulation appearance	N/A IC Auto Adjust
BRTC	Sub-bright adjustment	Picture MODE-1	Sub-bright signal	Screen adjustment	1. This item shall be adjusted after the screen VR adjustment and white balance adjustment 2. Adjust the number of collapsed black lines of the sub-bright signal	32": 32Z13B/ 32Z13G 4±1.5 lines 28": 28Z13B/ 28Z13G 4±1.5 lines

Items	Names	Settings	Input signals	Measuring points	Adjusting methods	Adjusting standards
RCUT GCUT BCUT Screen VR  GDRV BDRV	Screen adjustment and white balance adjustment (R cut off) (G cut off) (B cut off) (Screen)	RCUT: 40H GCUT: 40H BCUT: 40H GDRV: 40H BDRV: 40H  Activated horizontal straight line mode (Local video key)		Screen adjustment	1. Set the conditions as shown left. 2. Gradually raise the screen brightness until either of R, G or B lines starts to gleam slightly. 3. Determine that point as the screen VR adjustment position. 4. Using RCUT, GCUT and BCUT, raise the brightness of two lines except the one that gleamed in step 2 until these lines start to gleam slightly (i.e. make the screen almost white). 5. Release the horizontal straight line mode (Local video key). 6. Using the white balance checker, repeat the adjustment steps until both bright and dark parts become correct value.	HIGH LIGHT (103 cd/m <sup>2</sup> ) 8750K-0.002uv  DARK (17cd/m <sup>2</sup> ) 8750K-0.002uv  * Adjustment range is the same as before
	Screen Black level adjustment. R-Y axis B-Y axis	Contrast: MAX Bright: Center Colour: Center	SECAM Colour bar	SRV: TP46R or Q501 #20pin  SBV: TP46B or Q501 #22pin	1. Adjust the level of BW part of the colour difference signal to the level of HBLK part. 2. Adjust the R-Y axis and B-Y axis by SRV and SBV data items respectively.	0±10mV
SCNT	Sub-contrast	Picture MODE-1 Screen size: WIDE Audio system I	Sub-bright signal (PAL-I Signal)	TP46B or Q501 #22pin	1. Adjust the amplitude from the pedestal level to the white peak.	2.5±0.1Vp-p
COLP	Sub-colour center PAL	Picture MODE-1 Screen size: WIDE	Sub-bright signal (PAL)	TP46B or Q501 #22pin	1. Adjust the amplitude of B-Y. (Be sure to apply Y mute during adjustment)	32": 32Z13B/ 32Z13G 1.3±0.1 Vp-p 28": 28Z13B/ 28Z13G 1.3±0.1 Vp-p
COLS	Sub-colour center SECAM	Picture MODE-1 Screen size: WIDE	SECAM Colour bar	TP46B or Q501 #22pin	1. Adjust the amplitude of B-Y. (Be sure to apply Y mute during adjustment)	32": 32Z13B/ 32Z13G 1.7±0.1 Vp-p (Pedestal to Peak) 28": 28Z13B/ 28Z13G 1.7±0.1 Vp-p (Pedestal to Peak)

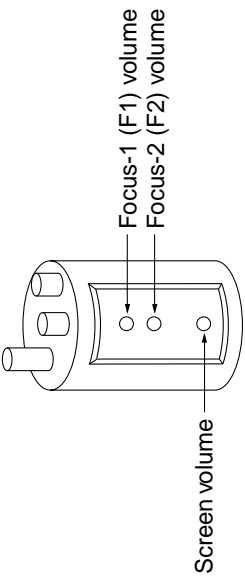
## Data adjustment

Adjusting items		Adjusting methods	
Vertical	WIDE mode Vertical amplitude [HIT]	PAL Philips Pattern, User adjustment standard Adjust the vertical amplitude by [HIT] so that both upper and lower flags will disappear from the screen.	 <p>Contact point during WIDE mode</p> <p>Contact point during Super-live mode</p>
	Vertical position [VPS1]	PAL Philips Pattern, User adjustment standard Adjust the vertical position [VPS1] with Philips Pattern so that the vertical screen position will come to the center (see the right sketch) Note: Adjust and orient CPT either toward the south and north. If this is impossible, offset the difference.	
	SUPER LIVE mode Vertical amplitude [HIT]	PAL Philips Pattern, User adjustment standard Adjust the vertical amplitude by [HIT] so that the top and bottom of the circle will touch the CPT mask with Philips Pattern (see the right sketch).	
	CINEMA mode Vertical amplitude [HIT]	Phillips Pattern, User adjustment standard Adjust the vertical amplitude by [HIT] so that the points shown in the right bottom sketch will touch the CRT mask (see the right sketch).	 <p>Contact point during CINEMA mode</p>

# Data Adjustment

	Adjustment items	Adjustment methods
Horizontal	<p>WIDE mode</p> <p>Horizontal phase: [HPOS]  Horizontal width: [WID]  DPC correction: [PARA]  Trapezoidal correction: [TRAP]  DPC Corner correction: [CNR]  Center wrap: [CPAR]  DPC S correction: [HSC]  Parallelogram correction: [CSAW]</p>	<p>Use PAL Philips.</p> <ol style="list-style-type: none"> <li>1. Use the [HPOS] for the horizontal screen position, and make adjustments so that the position will become a center.</li> <li>2. Use the [WID] to fit the mask to the frames of left and right flags.</li> <li>3. Use the [PARA] and [TRAP] and [TRAP] become optimum.</li> <li>4. In case distortion adjustment is insufficient by the [PARA] [TRAP] adjustments , make adjustments by using the data of [CNR], [CPAR], [HSC] and [CSAW]. <ol style="list-style-type: none"> <li>① Decrease [CPAR] in case of the distortion shown in Fig. (a).  On the contrary, increase [CPAR] in case of this distortion shown in Fig. (b).</li> <li>② Decrease [CSAW] in case of the distortion shown in Fig. (c).  On the contrary, increase [CSAW] in case of this distortion shown in Fig. (d).</li> <li>③ Decrease [HSC] in case of the distortion shown in Fig. (e).  On the contrary, increase [HSC] in case of this distortion shown in Fig. (f).</li> </ol> </li> </ol> <p>5. Re-adjust item (3) if need.</p> 
	<p>SUPER LIVE mode</p> <p>Horizontal width: [WID]  DPC correction: [PARA]  Trapezoidal correction: [TRAP]  DPC corner correction: [CNR]  DPC S correction: [HSC]  Parallelogram correction: [CSAW]</p>	<p>Use PAL Philips Pattern.</p> <p>How to adjust: same way as wide mode except [HPOS] and [CPRA].  [HPOS] and [CPRA] are NO adjust in SUPER LIVE mode.</p>
	<p>CINEMA mode</p> <p>Horizontal width: [WID]  DPC correction: [PARA]  Trapezoidal correction: [TRAP]  DPC corner correction: [CNR]  DPC S correction: [HSC]  Parallelogram correction: [CSAW]</p>	<p>Use PAL Philips Pattern.</p> <p>How to adjust: same way as wide mode except [HPOS] and [CPRA].  [HPOS] and [CPRA] are NO adjust in CINEMA mode.</p>

## Circuit adjustment (Volume/data adjustment)

Items	Adjustment items	Settings	Measuring points	Adjusting methods
FOCUS	Focus adjustment (1) Horizontal Focus Using F1 volume of T461 (FBT)	PAL Retoma signal WIDE mode	(1) refer to the Fig. 2	Set it at the position, where the screen center becomes optimum focus and most anticlockwise, using the focus volume (F1) of Fly-Back Transformer (T461).
	Focus adjustment (2) Vertical. Focus Using F2 volume of T461 (FBT)	PAL Retoma signal WIDE mode	(2) refer to the Fig. 2	Set it at the position, where the screen centre becomes optimum focus and most anticlockwise, using the focus volume (F2) of Fly-Back Transformer (T461). 



## CIRCUIT CHECK

### HIGH VOLTAGE CHECK

**CAUTION:** There is no HIGH VOLTAGE ADJUSTMENT on this chassis. Checking should be done following the steps below.

1. Connect an accurate high voltage meter to the second anode of the picture tube.
2. Turn on the receiver. Set the BRIGHTNESS and CONTRAST controls to minimum (zero beam current).
3. High voltage must be measured below (B) kV.

Refer to table-1 for high voltage (B).  
(See SETTING & ADJUSTING DATA on page 18)

4. Vary the BRIGHTNESS control to both extremes to be sure the high voltage does not exceed the limit under any conditions.

## CHAPTER 2 SPECIFIC INFORMATIONS

### SETTING & ADJUSTING DATA

#### 【 SAFETY INSTRUCTIONS 】

		32"
HIGH VOLTAGE AT ZERO BEAM:	(A)	33.2 kV
MAX HIGH VOLTAGE:	(B)	34.0 kV
AC VOLTAGE	(C)	220~240 V

Table-1

#### 【 SERVICE MODE 】

##### ADJUSTING ITEMS AND DATAS IN THE SERVICE MODE:

Item	Adjustment	Reference data		Item	Adjustment	Reference data	
RCUT	R CUTOFF (B/W)	40H	←	VPOS1	V-POSITION (WIDE)	80H	←
GCUT	G CUTOFF (B/W)	40H	←	HIT	HEIGHT (WIDE)	34H	←
BCUT	B CUTOFF (B/W)	40H	←	VLIN	V-LINEARITY (WIDE)	13H	←
GDRV	R DRIVE	40H	←	WID	PICTURE WIDTH (WIDE)	34H	22H
BDRV	B DRIVE	40H	←	PARA	E-W PARABOLA (WIDE)	15H	11H
BRTC	SUB BRIGHT CEN	40H	←	CNR	E-W CORNER (WIDE)	18H	0FH
COLP	SUB COLOR CEN PAL	3CH	←	TRAP	TRAPEZIUM (WIDE)	3BH	3CH
COLS	SUB COLOR CEN SECAM	3CH	←	RAGC	RF AGC	27H	←
SCNT	SUB CONTRAST	07H	←	CSAW	CENTER SAW	06H	05H
SRY	SECAM R-Y	08H	←	CPAR	CENT PARA	05H	02H
SBY	SECAM B-Y	07H	←	HSC	E-W S CORR	10H	12H
HPOS	H-POSITION (WIDE)	09H	07H				

Table-2

#### 【 DESIGN MODE 】

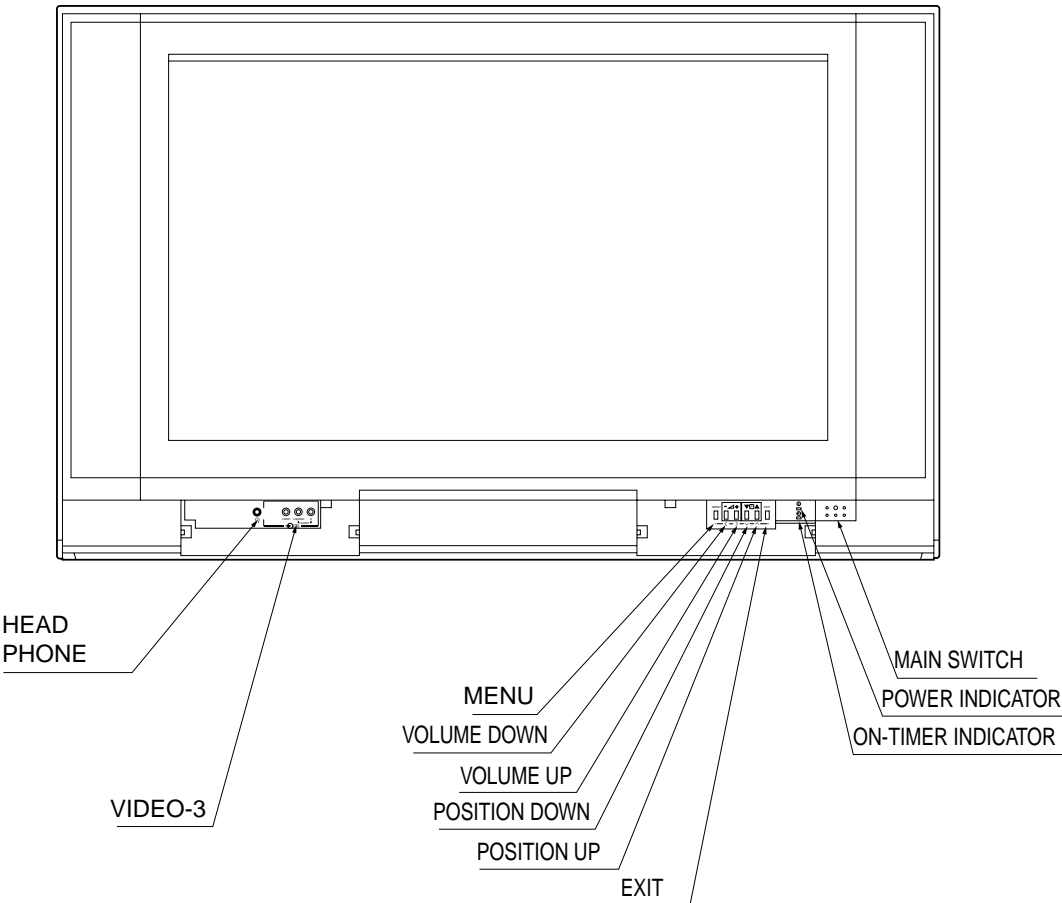
##### ADJUSTING ITEMS AND DATAS IN THE DESIGN MODE:

Item	Name of adjustment	Preset Data	Data	Remarks
* There are no adjustments of the design mode.				

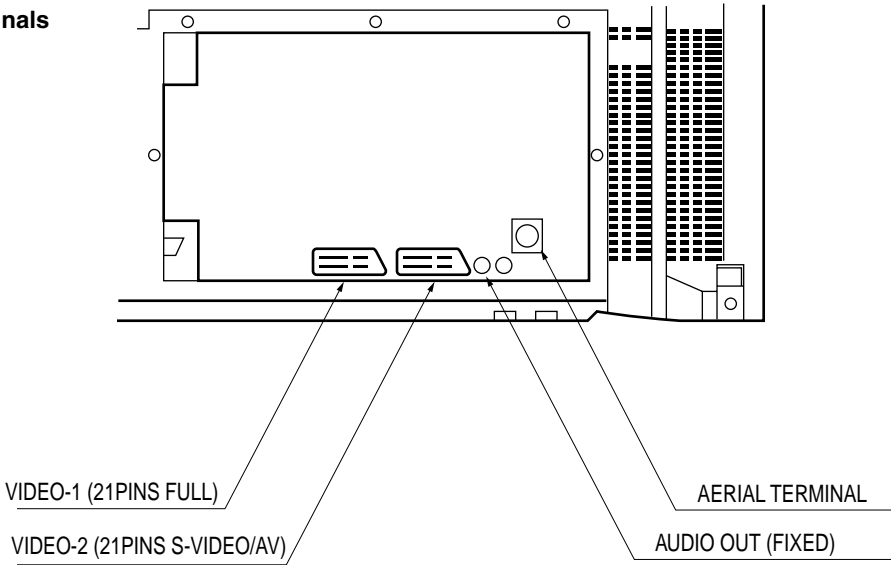
Table-3

# LOCATION OF CONTROLS

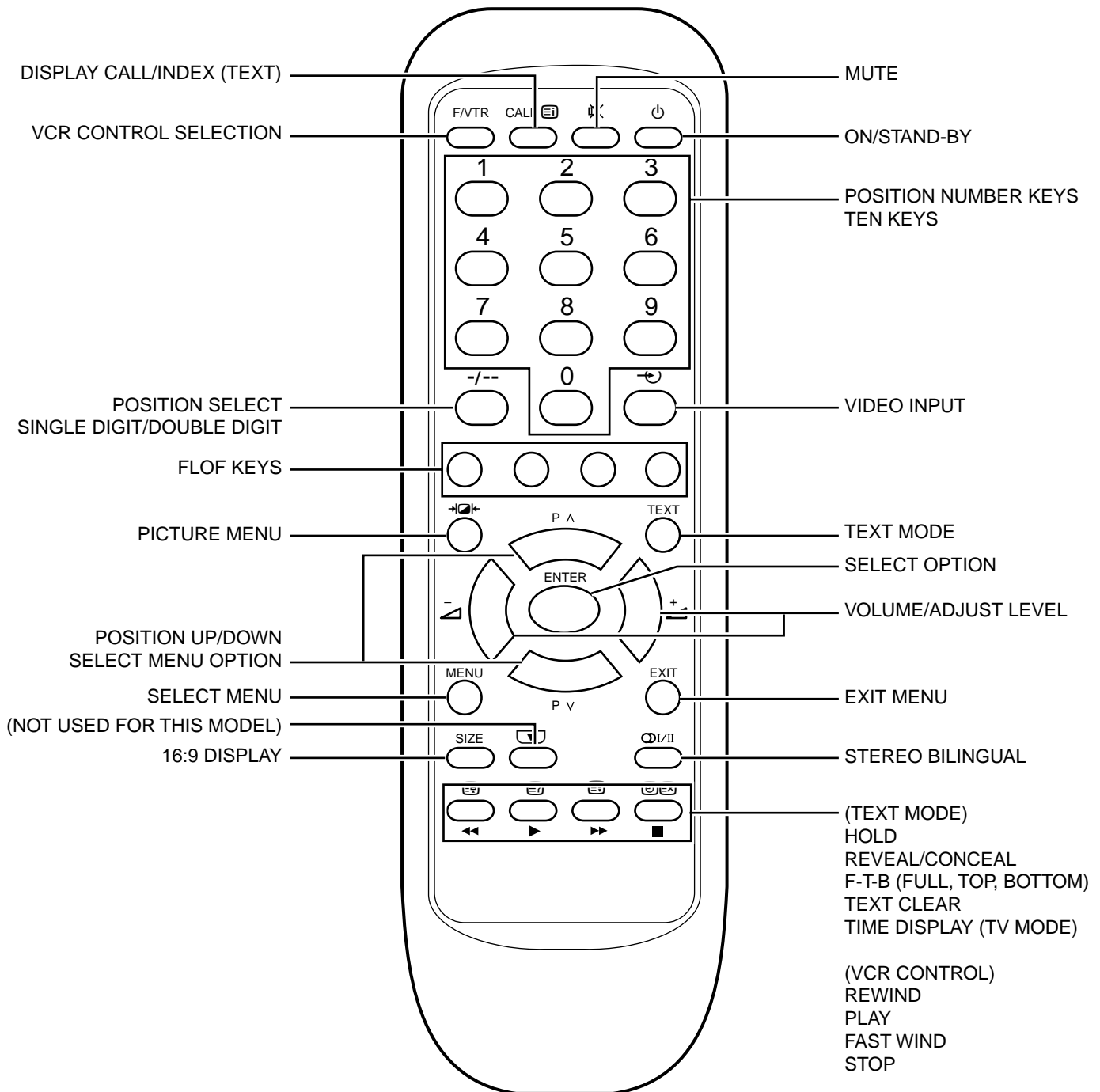
Front



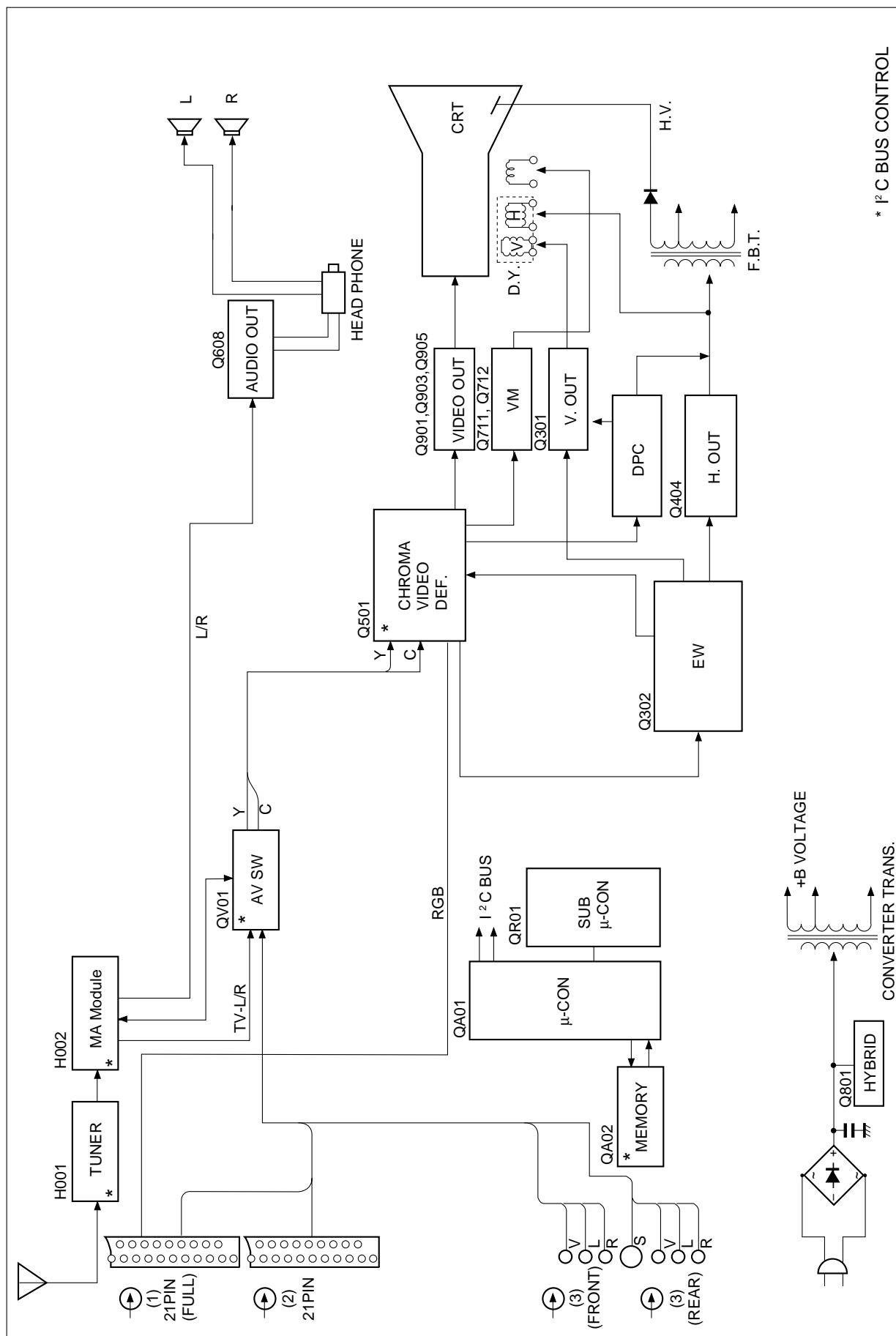
Rear terminals



## Remote Controller



# CIRCUIT BLOCK DIAGRAM



\* I²C BUS CONTROL

# CHASSIS AND CABINET REPLACEMENT PARTS LIST

**WARNING:** BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION", "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" ON PAGE 3 OF THIS MANUAL.

**CAUTION:** The international hazard symbols "⚠" in the schematic diagram and the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list. The mounting position of replacements is to be identical with originals. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE. Do not degrade the safety of the receiver through improper servicing.

**NOTICE:**

- The part number must be used when ordering parts, in order to assist in processing, be sure to include the Model number and Description.
- The PC board assembly with \* mark is no longer available after the end of the production.

**Models : 32Z13B, 32Z13G**

Capacitors ..... CD : Ceramic Disk      PF : Plastic Film      EL : Electrolytic  
Resistors ..... CF : Carbon Film      CC : Carbon Composition      MF : Metal Film  
                         OMF : Oxide Metal Film      VR : Variable Resistor      FR : Fusible Resistor  
(All CD and PF capacitors are  $\pm 5\%$ , 50V and all resistors,  $\pm 5\%$ , 1/6W unless otherwise noted.)

Location No.	Parts No.	Description
<b>CAPACITORS</b>		
C106	24503049	MT PLA CAP 63V 0.47UF J
C111	24503049	MT PLA CAP 63V 0.47UF J
C112	24436120	CC45SL1H120J (32Z13G)
C113	24232103	CK45F1H103Z (32Z13G)
C114	24797229	ELECTROLYTIC CE04G 50V 2.2UF M (32Z13B)
C114	24794470	ELECTROLYTIC CE04G 16V 47UF M (32Z13G)
C116	24503041	MT PLA CAP 63V 0.1UF J
C118	24794101	ELECTROLYTIC CE04G 16V 100UF M
C123	24794221	ELECTROLYTIC CE04G 16V 220UF M
C130	24436470	CC45SL1H470J (32Z13G)
C160	24794101	ELECTROLYTIC CE04G 16V 100UF M
C161	24797478	ELECTROLYTIC CE04G 50V 0.47UF M
C162	24212332	CERAMIC DISK CK45 B 50V 3300PF K
C165	24794100	ELECTROLYTIC CE04G 16V 10UF M
C166	24797010	ELECTROLYTIC CE04G 50V 1.0UF M
C168	24794100	ELECTROLYTIC CE04G 16V 10UF M
C169	24590103	PLASTIC FILM, 50V 0.01MF J
C180	24797229	ELECTROLYTIC CE04G 50V 2.2UF M
C181	24212102	CERAMIC DISK CK45 B 50V 1000PF K
C183	24794101	ELECTROLYTIC CE04G 16V 100UF M
C188	24794100	ELECTROLYTIC CE04G 16V 10UF M
C199	24797100	ELECTROLYTIC CE04G 50V 10UF M
C216	24797478	ELECTROLYTIC CE04G 50V 0.47UF M
C221	24436100	CERAMIC DISC CC45SL 50V SL 10PF C
C222	24436100	CERAMIC DISC CC45SL 50V SL 10PF C
C223	24436100	CERAMIC DISC CC45SL 50V SL 10PF C
C224	24794100	ELECTROLYTIC CE04G 16V 10UF M
C225	24503041	MT PLA CAP 63V 0.1UF J
C226	24206108	ELECTROLYTIC CE04WS 50V 0.1UF M 7L 3A
C233	24797010	ELECTROLYTIC CE04G 50V 1.0UF M
C302	24214471	CERAMIC DISK CK45 B 500V 470PF K
C303	24214471	CERAMIC DISK CK45 B 500V 470PF K
C305	24667222	ELECTROLYTIC CE04Q 25V 2200UF M 3A
C308	24797221	ELECTROLYTIC CE04G 50V 220UF M
C309	24591102	PLASTIC FILM, 50V 1000PF J

Location No.	Parts No.	Description
C310	24795222	ELECTROLYTIC CE04G 25V 2200UF M
C313	24082057	PLASTIC FILM CF922 M 100V 220000PF J
C316	24795471	ELECTROLYTIC CE04G 25V 470UF M
C317	24214561	CERAMIC DISK CK45 B 500V 560PF K
C318	24794471	ELECTROLYTIC CE04G 16V 470UF M
C319	24212102	CERAMIC DISK CK45 B 50V 1000PF K
C320	24796479	ELECTROLYTIC CE04G 35V 4.7UF M
C320	24795471	ELECTROLYTIC CE04G 25V 470UF M
C322	24617912	ELECTROLYTIC CE04CH 50V 2.2UF K 3A LI
C323	24503049	MT PLA CAP 63V 0.47UF J
C325	24590223	PLASTIC FILM, 50V 0.022MF J
C326	24797010	ELECTROLYTIC CE04G 50V 1.0UF M
C327	24794471	ELECTROLYTIC CE04G 16V 470UF M
C329	24503045	MT PLA CAP 63V 0.22UF J
C331	24503038	MT PLA CAP 63V 0.056UF J
C332	24212102	CERAMIC DISK CK45 B 50V 1000PF K
C341	24503049	MT PLA CAP 63V 0.47UF J
C366	24082049	PLASTIC FILM CF922 M 100V 47000PF J
C370	24794100	ELECTROLYTIC CE04G 16V 10UF M
C371	24797100	ELECTROLYTIC CE04G 50V 10UF M
C374	24797470	ELECTROLYTIC CE04G 50V 47UF M
C375	24797470	ELECTROLYTIC CE04G 50V 47UF M
C403	24590822	PLASTIC FILM, 50V 8200PF J
C404	24797478	ELECTROLYTIC CE04G 50V 0.47UF M
C410	24214471	CERAMIC DISK CK45 B 500V 470PF K
C413	24214821	CERAMIC DISK CK45 B 500V 820PF K
C416	24678010	ELECTROLYTIC CE04Q 200V 1.0UF M 3A
C417	24214391	CERAMIC DISK CK45 B 500V 390PF K
C420	24794101	ELECTROLYTIC CE04G 16V 100UF M
C423	24829433	PLASTIC FILM CQ92 T 400V 43000PF J
C430	24820472	PLASTIC FILM CQ92 T 630V 4700PF J
C432	24590103	PLASTIC FILM, 50V 0.01MF J
C433	24794100	ELECTROLYTIC CE04G 16V 10UF M
C434	24794222	ELECTROLYTIC CE04G 16V 2200UF M
C440	24082962	PLASTIC FILM CF92 T 1500VH 8700PF H
C442	24082995	PLASTIC FILM, 250V 0.36 UF J
C444	24082609	PLASTIC FILM, 1800VH 5100PF H
C445	24828473	PLASTIC FILM CQ92 T 200V 47000PF J
C446	24679330	ELECTROLYTIC CE04Q 250V 33UF M 3A

Location No.	Parts No.	Description
C447	24829153	PLASTIC FILM CQ92 T 400V 15000PF J
C448	24640908	ELECTROLYTIC CE04H 160V 33UF M 3A LI
C451	24503045	MT PLA CAP 63V 0.22UF J
C452	24503043	MT PLA CAP 63V 0.15UF J
C460	24073092	ELECTROLYTIC CE04P 50V 330UF M 3A
C462	24794222	ELECTROLYTIC CE04G 16V 2200UF M
C463	24212222	CERAMIC DISK CK45 B 50V 2200PF K
C464	24640900	CAPACITOR ELEC,CE04W 100V 4.7MF CE04W2A4R7
C466	24820163	PLASTIC FILM CQ92 T 630V 16000PF J
C470	24794470	ELECTORLYTIC CE04G 16V 47UF M
C471	24085988	ELEC. NONPOLAR CE04J 50V 1.0UF M 7L NP
C472	24503049	MT PLA CAP 63V 0.47UF J
C473	24669010	ELECTROLYTIC CE04Q 50V 1.0UF M 3A
C475	24820103	PLASTIC FILM CQ92 T 630V 10000PF J
C476	24794220	ELECTROLYTIC CE04G 16V 22UF M
C477	24503041	MT PLA CAP 63V 0.1UF J
C478	24503038	MT PLA CAP 63V 0.056UF J
C479	24214471	CERAMIC DISK CK45 B 500V 470PF K
C481	24085988	ELEC. NONPOLAR CE04J 50V 1.0UF M 7L NP
C484	24590103	PLASTIC FILM, 50V 0.01MF J
C490	24082983	PLASTIC FILM CF92 T 250V 1R5UF J
C491	24082989	PLASTIC FILM CF92 T 250V 2R7UF J
C492	24082433	PLASTIC FILM CF92 T 250V R12UF J
C494	24082973	PLASTIC FILM CF92 T 250V R56UF J
C495	24092343	CERAMIC DISC CK45R 2KV 680PF K
C496	24092343	CERAMIC DISC CK45R 2KV 680PF K
C510	24503041	MT PLA CAP 63V 0.1UF J
C511	24503041	MT PLA CAP 63V 0.1UF J
C512	24212222	CERAMIC DISK CK45 B 50V 2200PF K
C521	24503041	MT PLA CAP 63V 0.1UF J
C522	24503041	MT PLA CAP 63V 0.1UF J
C523	24503041	MT PLA CAP 63V 0.1UF J
C524	24794101	ELECTROLYTIC CE04G 16V 100UF M
C525	24590103	PLASTIC FILM, 50V 0.01MF J
C526	24590222	PLASTIC FILM, 50V 2200PF J
C527	24353090	CERAMIC DISC CC45CH 50V CH 9PF C
C528	24206228	ELECTROLYTIC CE04WS 50V 0.22UF M 7L 3A
C529	24794101	ELECTROLYTIC CE04G 16V 100UF M
C560	24503041	MT PLA CAP 63V 0.1UF J
C561	24503041	MT PLA CAP 63V 0.1UF J
C562	24503041	MT PLA CAP 63V 0.1UF J
C563	24503041	MT PLA CAP 63V 0.1UF J
C564	24503041	MT PLA CAP 63V 0.1UF J
C565	24503041	MT PLA CAP 63V 0.1UF J
C567	24794100	ELECTROLYTIC CE04G 16V 10UF M
C571	24794100	ELECTROLYTIC CE04G 16V 10UF M
C572	24794470	ELECTORLYTIC CE04G 16V 47UF M
C573	24794100	ELECTROLYTIC CE04G 16V 10UF M
C601	24797478	ELECTROLYTIC CE04G 50V 0.47UF M
C603	24212102	CERAMIC DISK CK45 B 50V 1000PF K
C612	24797100	ELECTROLYTIC CE04G 50V 10UF M
C613	24797100	ELECTROLYTIC CE04G 50V 10UF M
C621	24590103	PLASTIC FILM, 50V 0.01MF J
C626	24797470	ELECTROLYTIC CE04G 50V 47UF M
C633	24503042	MT PLA CAP 63V 0.12UF J
C634	24503042	MT PLA CAP 63V 0.12UF J
C636	24797100	ELECTROLYTIC CE04G 50V 10UF M
C637	24667470	ELECTROLYTIC CE04Q 25V 47UF M 3A
C638	24667470	ELECTROLYTIC CE04Q 25V 47UF M 3A
C639	24796102	ELECTROLYTIC CE04G 35V 1000UF M
C641	24795470	ELECTROLYTIC CE04G 25V 47UF M

Location No.	Parts No.	Description
C642	24797100	ELECTROLYTIC CE04G 50V 10UF M
C643	24797479	ELECTROLYTIC CE04G 50V 4.7UF M
C644	24668102	ELECTROLYTIC CE04Q 35V 1000UF M 3A
C645	24668102	ELECTROLYTIC CE04Q 35V 1000UF M 3A
C648	24797479	ELECTROLYTIC CE04G 50V 4.7UF M
C649	24797479	ELECTROLYTIC CE04G 50V 4.7UF M
C669	24797330	ELECTROLYTIC CE04G 50V 33UF M
C670	24797330	ELECTROLYTIC CE04G 50V 33UF M
C674	24591561	PLASTIC FILM CQ921 M 50V 560PF J
C677	24591561	PLASTIC FILM CQ921 M 50V 560PF J
C696	24793101	ELECTROLYTIC CE04G 10V 100UF M
C704	24591822	PLASTIC FILM, 50V 8200PF J
C705	24797229	ELECTROLYTIC CE04G 50V 2.2UF M
C707	24794470	ELECTORLYTIC CE04G 16V 47UF M
C712	24794470	ELECTORLYTIC CE04G 16V 47UF M
C713	24790100	ELECTROLYTIC CE04G 160V 10UF M
C714	24436101	CERAMIC DISC CC45 SL 50V100PF J
C715	24214472	CERAMIC DISK CK45 B 500V 4700PF K
C716	24436101	CERAMIC DISC CC45 SL 50V100PF J
C717	24214472	CERAMIC DISK CK45 B 500V 4700PF K
C718	24794470	ELECTORLYTIC CE04G 16V 47UF M
C719	24435151	PCERA CAP SL 500V 151J
C720	24790100	ELECTROLYTIC CE04G 160V 10UF M
C721	24794470	ELECTORLYTIC CE04G 16V 47UF M
△ C801	24503055	MT PLA AC275V 0.22UF M
△ C802	24503055	MT PLA AC275V 0.22UF M
C805	24092281	CERAMIC DISC CK45E AC 250V 4700PF
C806	24092281	CERAMIC DISC CK45E AC 250V 4700PF
C808	24667221	ELECTROLYTIC CE04Q 25V 220UF M 3A
C810	24086037	ELECTRLYTIC 68W 400V 270UF M
C811	24092555	CERAMIC DISC CK45B AC250V 1000PF M (32Z13G)
△ C813	24092555	CERAMIC DISC CK45B AC250V 1000PF M
△ C814	24092555	CERAMIC DISC CK45B AC250V 1000PF M
C817	24092339	CERAMIC DISC CK45R 2KV 330PF K
C818	24095931	PLASTIC FILM CF92T 1250VH 2200PF J
C819	24676220	ELECTROLYTIC CE04Q 100V 22UF M 3A
C821	24214471	CERAMIC DISK CK45 B 500V 470PF K
C822	24503049	MT PLA CAP 63V 0.47UF J
C823	24214471	CERAMIC DISK CK45 B 500V 470PF K
C829	24590272	PLASTIC FILM, 50V 2700PF J
C833	24669010	ELECTROLYTIC CE04Q 50V 1.0UF M 3A
C841	24669100	ELECTROLYTIC CE04Q 50V 10UF M 3A
C842	24669100	ELECTROLYTIC CE04Q 50V 10UF M 3A
C843	24503041	MT PLA CAP 63V 0.1UF J
C846	24503045	MT PLA CAP 63V 0.22UF J
C860	24794470	ELECTORLYTIC CE04G 16V 47UF M
C884	24086916	ELECTROLYTIC CE692R 160V 330UF M 3D
C885	24214471	CERAMIC DISK CK45 B 500V 470PF K
C887	24214471	CERAMIC DISK CK45 B 500V 470PF K
C889	24669222	ELECTROLYTIC CE04Q 50V 2200UF M 3A
C890	24667222	ELECTROLYTIC CE04Q 25V 2200UF M 3A
C893	24092337	CERAMIC DISC CK45R 2KV 220PF K
C895	24669101	ELECTROLYTIC CE04Q 50V 100UF M 3A
C896	24214471	CERAMIC DISK CK45 B 500V 470PF K
C898	24503045	MT PLA CAP 63V 0.22UF J
C902	24092353	CERAMIC DISC CK45R 2KV 4700PF K
C904	24436561	CERAMIC DISC CC45 SL 50V560PF J
C905	24436561	CERAMIC DISC CC45 SL 50V560PF J
C907	24436561	CERAMIC DISC CC45 SL 50V560PF J
C909	24679100	ELECTROLYTIC CE04Q 250V 10UF M 3A
C910	24797478	ELECTROLYTIC CE04G 50V 0.47UF M
C911	24794100	ELECTROLYTIC CE04G 16V 10UF M
C912	24794102	ELECTROLYTIC CE04G 16V 1000UF M
C913	24794100	ELECTROLYTIC CE04G 16V 10UF M

Location No.	Parts No.	Description
C930	24214101	CERAMIC DISK CK45 B 500V 100PF K
C931	24214101	CERAMIC DISK CK45 B 500V 100PF K
C4401	24590103	PLASTIC FILM, 50V 0.01MF J
C4402	24766010	ELECTROLYTIC CE04G 50V 1.0UF M
C4403	24763331	ELECTROLYTIC CE04G 16V 330UF M
C4490	24082873	PLASTIC FILM CF92 T 250V R20UF J
C4491	24082873	PLASTIC FILM CF92 T 250V R20UF J
CA01	24503041	MT PLA CAP 63V 0.1UF J
CA02	24503041	MT PLA CAP 63V 0.1UF J
CA03	24503041	MT PLA CAP 63V 0.1UF J
CA05	24212101	CERAMIC DISK CK45 B 50V 100PF K
CA07	24436560	CERAMIC DISC CC45S 50V 56PFJ
CA08	24436560	CERAMIC DISC CC45S 50V 56PFJ
CA10	24503041	MT PLA CAP 63V 0.1UF J
CA11	24794100	ELECTROLYTIC CE04G 16V 10UF M
CA12	24794470	ELECTROLYTIC CE04G 16V 47UF M
CA14	24794100	ELECTROLYTIC CE04G 16V 10UF M
CA16	24794100	ELECTROLYTIC CE04G 16V 10UF M
CB01	24797010	ELECTROLYTIC CE04G 50V 1.0UF M
CB01	24794470	ELECTORLYTIC CE04G 16V 47UF M
CB02	24503041	MT PLA CAP 63V 0.1UF J
CB03	24794330	ELECTROLYTIC CE04G 16V 33UF M
CB04	24212392	CERAMIC DISK CK45 B 50V 3900PF K
CB05	24212561	CERAMIC DISK CK45 B 50V 560PF K
CB32	24503049	MT PLA CAP 63V 0.47UF J
CB33	24212472	CERAMIC DISK CK45 B 50V 4700PF K
CB37	24436150	CERAMIC DISC CC45 SL 50V15PF J
CB46	24797100	ELECTROLYTIC CE04G 50V 10UF M
CC01	24212102	CERAMIC DISK CK45 B 50V 1000PF K
CC01	24212332	CERAMIC DISK CK45 B 50V 3300PF K
CC02	24212102	CERAMIC DISK CK45 B 50V 1000PF K
CC02	24212332	CERAMIC DISK CK45 B 50V 3300PF K
CC03	24212152	CERAMIC DISK CK45 B 50V 1500PF K
CC04	24212152	CERAMIC DISK CK45 B 50V 1500PF K
CC05	24212152	CERAMIC DISK CK45 B 50V 1500PF K
CC05	24212102	CERAMIC DISK CK45 B 50V 1000PF K
CC06	24212152	CERAMIC DISK CK45 B 50V 1500PF K
CC06	24212102	CERAMIC DISK CK45 B 50V 1000PF K
CC07	24212102	CERAMIC DISK CK45 B 50V 1000PF K
CC08	24212102	CERAMIC DISK CK45 B 50V 1000PF K
CC09	24212471	CERAMIC DISK CK45 B 50V 470PF K
CC10	24212471	CERAMIC DISK CK45 B 50V 470PF K
CC11	24473330	CERAMIC CC141SL 50V 33PF J
CC14	24212102	CERAMIC DISK CK45 B 50V 1000PF K
CC16	24590103	PLASTIC FILM, 50V 0.01MF J
CC19	24474102	CERAMIC CK141B 50V 1000PF K
CC20	24474101	CERAMIC CK141B 50V 100PF K
CC21	24474101	CERAMIC CK141B 50V 100PF K
CC22	24473220	CERAMIC, 50V 22PF J
CC23	24473220	CERAMIC, 50V 22PF J
CC98	24232103	CK45F1H103Z (32Z13G)
CR01	24203100	ELECTORLYTIC CE04WS 16V 10UF M 7L 3A
CR02	24797010	ELECTROLYTIC CE04G 50V 1.0UF M
CR03	24797010	ELECTROLYTIC CE04G 50V 1.0UF M
CR04	24797010	ELECTROLYTIC CE04G 50V 1.0UF M
CR05	24797010	ELECTROLYTIC CE04G 50V 1.0UF M
CR06	24797010	ELECTROLYTIC CE04G 50V 1.0UF M
CR07	24797010	ELECTROLYTIC CE04G 50V 1.0UF M
CR08	24353270	CERAMIC DISC CC45CH 50V 27PF J
CV02	24797010	ELECTROLYTIC CE04G 50V 1.0UF M
CV03	24797010	ELECTROLYTIC CE04G 50V 1.0UF M
CV04	24794100	ELECTROLYTIC CE04G 16V 10UF M
CV05	24797010	ELECTROLYTIC CE04G 50V 1.0UF M
CV06	24797010	ELECTROLYTIC CE04G 50V 1.0UF M
CV07	24794100	ELECTROLYTIC CE04G 16V 10UF M

Location No.	Parts No.	Description
CV08	24797010	ELECTROLYTIC CE04G 50V 1.0UF M
CV09	24794100	ELECTROLYTIC CE04G 16V 10UF M
CV10	24794100	ELECTROLYTIC CE04G 16V 10UF M
CV12	24794100	ELECTROLYTIC CE04G 16V 10UF M
CV13	24797010	ELECTROLYTIC CE04G 50V 1.0UF M
CV15	24794100	ELECTROLYTIC CE04G 16V 10UF M
CV17	24794101	ELECTROLYTIC CE04G 16V 100UF M
CV24	24794101	ELECTROLYTIC CE04G 16V 100UF M
CV26	24797470	ELECTROLYTIC CE04G 50V 47UF M (32Z13B)
CV31	24794220	ELECTROLYTIC CE04G 16V 22UF M
CV32	24794220	ELECTROLYTIC CE04G 16V 22UF M
CV36	24503041	MT PLA CAP 63V 0.1UF J
CV37	24503045	MT PLA CAP 63V 0.22UF J
CV38	24794101	ELECTROLYTIC CE04G 16V 100UF M
CV39	24794220	ELECTROLYTIC CE04G 16V 22UF M (32Z13B)
CV40	24797478	ELECTROLYTIC CE04G 50V 0.47UF M
CV41	24794220	ELECTROLYTIC CE04G 16V 22UF M (32Z13B)
CV54	24794220	ELECTROLYTIC CE04G 16V 22UF M
CV98	24212102	CERAMIC DISK CK45 B 50V 1000PF K
<b>RESISTORS</b>		
R101	24366271	CARBON FILM, 1/6W 270 OHM J
R101	24553223	OXIDE RES B 1W 223J
R103	24366472	CARBON FILM, 1/6W 4.7K OHM J (32Z13G)
R104	24366472	CARBON FILM, 1/6W 4.7K OHM J (32Z13G)
R105	24366472	CARBON FILM, 1/6W 4.7K OHM J (32Z13G)
R106	24366360	CARBON FILM SB1/6W 36. J
R107	24366102	CARBON FILM, 1/6W 1K OHM J
R108	24366562	CARBON FILM, 1/6W 5.6K OHM J
R110	24366681	CARBON FILM, 1/6W 680 OHM J
R112	24366122	CARBON FILM, 1/6W 1.2K OHM J
R113	24366682	CARBON FILM, 1/6W 6.8K OHM J
R114	24366471	CARBON F1LM, 1/6W 470 OHM J
R115	24366360	CARBON FILM SB1/6W 36. J
R118	24366683	CARBON FILM, 1/6W 68K OHM J
R119	24366133	CARBON FILM, 1/6W 13K OHM J
R120	24366122	CARBON FILM, 1/6W 1.2K OHM J (32Z13G)
R121	24366512	CARBON FILM, 1/6W 5.1K OHM J (32Z13G)
R126	24366332	CARBON F1LM, 1/6W 3.3K OHM J (32Z13G)
R127	24366102	CARBON FILM, 1/6W 1K OHM J (32Z13G)
R128	24366182	CARBON FILM, 1/6W 1.8K OHM J
R129	24366101	CARBON FILM, 1/6W 100 OHM J
R130	24366103	CARBON FILM, 1/6W 10K OHM J (32Z13G)
R132	24366471	CARBON F1LM, 1/6W 470 OHM J
R133	24366221	CARBON FILM, 1/6W 220 OHM J
R135	24366101	CARBON FILM, 1/6W 100 OHM J
R136	24366102	CARBON FILM, 1/6W 1K OHM J
R167	24366151	CARBON FILM, 1/6W 150 OHM J
R168	24366684	CARBON FILM, 1/6W 680K OHM J
R208	24366103	CARBON FILM, 1/6W 10K OHM J
R209	24366103	CARBON FILM, 1/6W 10K OHM J
R211	24366473	CARBON FILM, 1/6W 47K OHM J
R216	24366824	CARBON FILM, 1/6W 820K OHM J
R217	24366392	CARBON FILM, 1/6W 3.9K OHM J
R218	24366104	CARBON FILM, 1/6W 100K OHM J
R219	24366473	CARBON FILM, 1/6W 47K OHM J
R227	24366223	CARBON FILM, 1/6W 22K OHM J
R228	24366271	CARBON FILM, 1/6W 270 OHM J
R229	24366271	CARBON FILM, 1/6W 270 OHM J
R230	24366271	CARBON FILM, 1/6W 270 OHM J
R303	24321109	OXIDE METAL FILM, 1/2W 1 OHM J
R305	24322109	METAL FILM, 1W 1 OHM J



Location No.	Parts No.	Description
R307	24366101	CARBON FILM, 1/6W 100 OHM J
R308	24382681	OXIDE FILM 1W 680 J
R312	24366223	CARBON FILM, 1/6W 22K OHM J
R314	24366102	CARBON FILM, 1/6W 1K OHM J
R316	24366394	CARBON FILM, 1/6W 390K OHM J
R318	24366101	CARBON FILM, 1/6W 100 OHM J
R319	24366101	CARBON FILM, 1/6W 100 OHM J
R320	24366155	CARBON FILM SB1/6W 1.5M J
R321	24366103	CARBON FILM, 1/6W 10K OHM J
R322	24366102	CARBON FILM, 1/6W 1K OHM J
R326	24339109	METAL FILM 2W 1R0 J
R327	24339109	METAL FILM 2W 1R0 J
R329	24366102	CARBON FILM, 1/6W 1K OHM J
R330	24366103	CARBON FILM, 1/6W 10K OHM J
R331	24366104	CARBON FILM, 1/6W 100K OHM J
R332	24366101	CARBON FILM, 1/6W 100 OHM J
R333	24552912	OXIDE FILM 1/2W 9.1K J
R335	24366153	CARBON FILM, 1/6W 15K OHM J
R336	24383681	OXIDE METAL FILM, 2W 680 OHM J
R338	24552332	OXIDE METAL FILM, 1/2W 3.3K OHM J
R341	24366822	CARBON FILM, 1/6W 8.2K OHM J
R343	24366223	CARBON FILM, 1/6W 22K OHM J
R370	24366822	CARBON FILM, 1/6W 8.2K OHM J
R371	24366103	CARBON FILM, 1/6W 10K OHM J
R372	24552150	OXIDE RES B 1/2W 150J
R373	24366103	CARBON FILM, 1/6W 10K OHM J
R373	24366103	CARBON FILM, 1/6W 10K OHM J
R374	24366472	CARBON FILM, 1/6W 4.7K OHM J
R375	24366103	CARBON FILM, 1/6W 10K OHM J
R400	24946561	CARBON COMPOSITION GF 1/2W 560 K
R402	24366103	CARBON FILM, 1/6W 10K OHM J
R403	24366822	CARBON FILM, 1/6W 8.2K OHM J
R405	24553682	OXIDE RES B 1W 682J
R410	24366271	CARBON FILM, 1/6W 270 OHM J
R411	24366103	CARBON FILM, 1/6W 10K OHM J
R411	24366561	CARBON FILM, 1/6W 560 OHM J
R412	24366332	CARBON FILM, 1/6W 3.3K OHM J
R413	24366103	CARBON FILM, 1/6W 10K OHM J
R414	24366332	CARBON FILM, 1/6W 3.3K OHM J
R414	24531560	FUSIBLE, 1/2W 56 OHM J
R415	24366103	CARBON FILM, 1/6W 10K OHM J
R415	24553472	OXIDE RES B 1W 472J
R416	24366223	CARBON FILM, 1/6W 22K OHM J
R417	24366333	CARBON FILM, 1/6W 33K OHM J
R417	24510432	CERAMIC COVERED G 5W 4.3K J
R418	24366103	CARBON FILM, 1/6W 10K OHM J
R419	24366103	CARBON FILM, 1/6W 10K OHM J
R423	24366471	CARBON FILM, 1/6W 470 OHM J
R424	24366152	CARBON FILM, 1/6W 1.5K OHM J
R425	24366182	CARBON FILM, 1/6W 1.8K OHM J
R426	24366751	CARBON FILM, 1/6W 750 OHM J
R427	24366392	CARBON FILM, 1/6W 3.9K OHM J
R428	24366561	CARBON FILM, 1/6W 560 OHM J
R429	24552560	OXIDE METAL FILM, 1/2W 56 OHM J
R430	24366223	CARBON FILM, 1/6W 22K OHM J
R431	24366223	CARBON FILM, 1/6W 22K OHM J
R431	24366103	CARBON FILM, 1/6W 10K OHM J
R432	24366392	CARBON FILM, 1/6W 3.9K OHM J
R432	24366473	CARBON FILM, 1/6W 47K OHM J
R433	24366103	CARBON FILM, 1/6W 10K OHM J
R433	24366681	CARBON FILM, 1/6W 680 OHM J
R434	24366271	CARBON FILM, 1/6W 270 OHM J
R434	24366472	CARBON FILM, 1/6W 4.7K OHM J
R435	24366184	CARBON FILM, 1/6W 180K OHM J
R436	24366153	CARBON FILM, 1/6W 15K OHM J

Location No.	Parts No.	Description
R437	24366332	CARBON FILM, 1/6W 3.3K OHM J
R438	24366103	CARBON FILM, 1/6W 10K OHM J
R439	24366102	CARBON FILM, 1/6W 1K OHM J
R441	24382222	OXIDE METAL FILM, 1W 2.2K OHM J
R442	24366333	CARBON FILM, 1/6W 33K OHM J
R442	24533151	FUSIBLE, 2W 150 OHM J
R443	24366563	CARBON FILM, 1/6W 56K OHM J
R444	24366563	CARBON FILM, 1/6W 56K OHM J
R445	24366563	CARBON FILM, 1/6W 56K OHM J
R445	24321129	OXIDE METAL FILM, 1/2W 1.2 OHM J
R451	24366183	CARBON FILM, 1/6W 18K OHM J
R452	24366472	CARBON FILM, 1/6W 4.7K OHM J
R460	24552332	OXIDE METAL FILM, 1/2W 3.3K OHM J
R461	24552182	OXIDE METAL FILM, 1/2W 1.8K OHM J
R462	24366823	CARBON FILM, 1/6W 82K OHM J
R463	24323229	OXIDE METAL FILM, 2W 2.2 OHM J
R464	24366273	CARBON FILM, 1/6W 27K OHM J
R465	24366101	CARBON FILM, 1/6W 100 OHM J
R466	24366392	CARBON FILM, 1/6W 3.9K OHM J
R467	24327224	METAL FILM 1/4W 220K F
R469	24000211	FUSIBLE, 1/2W 15 OHM J
R470	24339568	METAL FILM 2W R56 J
R471	24531271	FUSIBLE, 1/2W 270 OHM J
R472	24366101	CARBON FILM, 1/6W 100 OHM J
R473	24366183	CARBON FILM, 1/6W 18K OHM J
R474	24376393	CARBON FILM 1/2W 39K J
R476	24366471	CARBON FILM, 1/6W 470 OHM J
R477	24366102	CARBON FILM, 1/6W 1K OHM J
R478	24381333	OXIDE FILM 1/2W 33K J
R479	24531680	FUSIBLE, 1/2W 68 OHM J
R480	24552222	OXIDE METAL FILM, 1/2W 2.2K OHM J
R481	24366223	CARBON FILM, 1/6W 22K OHM J
R481	24366103	CARBON FILM, 1/6W 10K OHM J
R482	24366183	CARBON FILM, 1/6W 18K OHM J
R482	24366684	CARBON FILM, 1/6W 680K OHM J
R483	24366183	CARBON FILM, 1/6W 18K OHM J
R484	24366223	CARBON FILM, 1/6W 22K OHM J
R486	24366183	CARBON FILM, 1/6W 18K OHM J
R487	24366474	CARBON FILM, 1/6W 470K OHM J
R488	24366154	CARBON FILM, 1/6W 150K OHM J
R489	24366102	CARBON FILM, 1/6W 1K OHM J
R490	24366101	CARBON FILM, 1/6W 100 OHM J
R491	24366101	CARBON FILM, 1/6W 100 OHM J
R492	24366472	CARBON FILM, 1/6W 4.7K OHM J
R493	24366103	CARBON FILM, 1/6W 10K OHM J
R494	24366103	CARBON FILM, 1/6W 10K OHM J
R495	24366103	CARBON FILM, 1/6W 10K OHM J
R499	24366101	CARBON FILM, 1/6W 100 OHM J
R509	24366332	CARBON FILM, 1/6W 3.3K OHM J
R510	24366101	CARBON FILM, 1/6W 100 OHM J
R511	24000527	METAL FILM, 1/4W 5.6K OHM F
R512	24366682	CARBON FILM, 1/6W 6.8K OHM J
R513	24366102	CARBON FILM, 1/6W 1K OHM J
R514	24366473	CARBON FILM, 1/6W 47K OHM J
R515	24366103	CARBON FILM, 1/6W 10K OHM J
R516	24366471	CARBON FILM, 1/6W 470 OHM J
R517	24366222	CARBON FILM, 1/6W 2.2K OHM J
R518	24366152	CARBON FILM, 1/6W 1.5K OHM J
R519	24366222	CARBON FILM, 1/6W 2.2K OHM J
R520	24366821	CARBON FILM, 1/6W 820 OHM J
R521	24366102	CARBON FILM, 1/6W 1K OHM J
R522	24366102	CARBON FILM, 1/6W 1K OHM J
R523	24366333	CARBON FILM, 1/6W 33K OHM J
R524	24366103	CARBON FILM, 1/6W 10K OHM J
R525	24366392	CARBON FILM, 1/6W 3.9K OHM J

Location No.	Parts No.	Description
R526	24366101	CARBON FILM, 1/6W 100 OHM J
R527	24366332	CARBON FILM, 1/6W 3.3K OHM J
R601	24366103	CARBON FILM, 1/6W 10K OHM J
R602	24366103	CARBON FILM, 1/6W 10K OHM J
R603	24366103	CARBON FILM, 1/6W 10K OHM J
R612	24366681	CARBON FILM, 1/6W 680 OHM J
R613	24366681	CARBON FILM, 1/6W 680 OHM J
R614	24366222	CARBON FILM, 1/6W 2.2K OHM J
R615	24366222	CARBON FILM, 1/6W 2.2K OHM J
R616	24366101	CARBON FILM, 1/6W 100 OHM J
R617	24366101	CARBON FILM, 1/6W 100 OHM J
R618	24366103	CARBON FILM, 1/6W 10K OHM J
R619	24366103	CARBON FILM, 1/6W 10K OHM J
R621	24366223	CARBON FILM, 1/6W 22K OHM J
R622	24366223	CARBON FILM, 1/6W 22K OHM J
R633	24366229	CARBON FILM, 1/6W 2.2 OHM J
R634	24366229	CARBON FILM, 1/6W 2.2 OHM J
R641	24366103	CARBON FILM, 1/6W 10K OHM J
R645	24366102	CARBON FILM, 1/6W 1K OHM J
R646	24366102	CARBON FILM, 1/6W 1K OHM J
R661	24552221	OXIDE METAL FILM, 1/2W 220 OHM J
R662	24552221	OXIDE METAL FILM, 1/2W 220 OHM J
R668	24366103	CARBON FILM, 1/6W 10K OHM J
R670	24366103	CARBON FILM, 1/6W 10K OHM J
R673	24366123	CARBON FILM, 1/6W 12K OHM J
R674	24366102	CARBON FILM, 1/6W 1K OHM J
R675	24366123	CARBON FILM, 1/6W 12K OHM J
R676	24366224	CARBON FILM, 1/6W 220K OHM J
R681	24366103	CARBON FILM, 1/6W 10K OHM J
R688	24366104	CARBON FILM, 1/6W 100K OHM J
R689	24366103	CARBON FILM, 1/6W 10K OHM J
R701	24366103	CARBON FILM, 1/6W 10K OHM J
R702	24552821	OXIDE RES B 1/2W 821J
R702	24366101	CARBON FILM, 1/6W 100 OHM J
R703	24366222	CARBON FILM, 1/6W 2.2K OHM J
R712	24366101	CARBON FILM, 1/6W 100 OHM J
R715	24366223	CARBON FILM, 1/6W 22K OHM J
R716	24366273	CARBON FILM, 1/6W 27K OHM J
R717	24366333	CARBON FILM, 1/6W 33K OHM J
R718	24366222	CARBON FILM, 1/6W 2.2K OHM J
R722	24552471	OXIDE METAL FILM, 1/2W 470 OHM J
R723	24366101	CARBON FILM, 1/6W 100 OHM J
R724	24366221	CARBON FILM, 1/6W 220 OHM J
R725	24366182	CARBON FILM, 1/6W 1.8K OHM J
R730	24552100	OXIDE METAL FILM, 1/2W 10 OHM J
R731	24553331	METAL OXIDE FILM B 1W 330. J
R732	24366820	CARBON FILM, 1/6W 82 OHM J
R733	24366683	CARBON FILM, 1/6W 68K OHM J
R734	24366820	CARBON FILM, 1/6W 82 OHM J
R735	24366683	CARBON FILM, 1/6W 68K OHM J
R736	24366560	CARBON FILM, 1/6W 56 OHM J
R737	24366152	CARBON FILM, 1/6W 1.5K OHM J
R738	24366102	CARBON FILM, 1/6W 1K OHM J
R739	24366152	CARBON FILM, 1/6W 1.5K OHM J
R740	24366560	CARBON FILM, 1/6W 56 OHM J
R741	24366279	CARBON FILM, 1/6W 2.7 OHM J
R742	24366279	CARBON FILM, 1/6W 2.7 OHM J
R743	24554221	OXIDE METAL FILM, 2W 220 OHM J
R744	24366122	CARBON FILM, 1/6W 1.2K OHM J
R745	24366122	CARBON FILM, 1/6W 1.2K OHM J
△ R801	24009954	METAL FILN, 1/2W 2.2M OHM J
R803	24553683	OXIDE 1W 68K
R805	24366681	CARBON FILM, 1/6W 680 OHM J
△ R808	24019484	THERMISTOR, PTC THERMISTOR AC265 4R5A

Location No.	Parts No.	Description
R814	24366682	CARBON FILM, 1/6W 6.8K OHM J
R815	24366332	CARBON FILM, 1/6W 3.3K OHM J
R818	24019461	METAL PLATE, 2W 0.15 OHM J
R819	24310829	METAL FILM 1/2W 8R2 J
R821	24366101	CARBON FILM, 1/6W 100 OHM J
R822	24552103	OXIDE METAL FILM, 1/2W 10K OHM J
R823	24552682	OXIDE METAL FILM, 1/2W 6.8K OHM J
R827	24366681	CARBON FILM, 1/6W 680 OHM J
R828	24366821	CARBON FILM, 1/6W 820 OHM J
R829	24321159	OXIDE METAL FILM, 1/2W 1.5 OHM J
R841	24531120	FUSIBLE, 1/2W 12 OHM J
R842	24552392	OXIDE METAL FILM, 1/2W 3.9K OHM J
R843	24366331	CARBON FILM, 1/6W 330 OHM J
R846	24366101	CARBON FILM, 1/6W 100 OHM J
R847	24366472	CARBON FILM, 1/6W 4.7K OHM J
R850	24366103	CARBON FILM, 1/6W 10K OHM J
R851	24366471	CARBON FILM, 1/6W 470 OHM J
R852	24366225	CARBON FILM, 1/6W 2.2M OHM J
R860	24366681	CARBON FILM, 1/6W 680 OHM J
R865	24366332	CARBON FILM, 1/6W 3.3K OHM J
R868	24366472	CARBON FILM, 1/6W 4.7K OHM J
△ R899	24005015	METAL GLAZE, 1W 8.2M OHM J
R901	24376471	CARBON RES B 1/2B 471J
R902	24376471	CARBON RES B 1/2B 471J
R903	24376471	CARBON RES B 1/2B 471J
R904	24366472	CARBON FILM, 1/6W 4.7K OHM J
R905	24366150	CARBON FILM, 1/6W 15 OHM J
R914	24366471	CARBON FILM, 1/6W 470 OHM J
R915	24366181	CARBON FILM, 1/6W 180 OHM J
R916	24366221	CARBON FILM, 1/6W 220 OHM J
R917	24366681	CARBON FILM, 1/6W 680 OHM J
R918	24366470	CARBON FILM, 1/6W 47 OHM J
R920	24000940	FUSIBLE, 2W 2.0 OHM J
R921	24366471	CARBON FILM, 1/6W 470 OHM J
R922	24366181	CARBON FILM, 1/6W 180 OHM J
R924	24366470	CARBON FILM, 1/6W 47 OHM J
R925	24366681	CARBON FILM, 1/6W 680 OHM J
R928	24366471	CARBON FILM, 1/6W 470 OHM J
R929	24366181	CARBON FILM, 1/6W 180 OHM J
R930	24366470	CARBON FILM, 1/6W 47 OHM J
R932	24366102	CARBON FILM, 1/6W 1K OHM J
R933	24366750	CARBON FILM, 1/6W 75 OHM J
R934	24366331	CARBON FILM, 1/6W 330 OHM J
R935	24366102	CARBON FILM, 1/6W 1K OHM J
R936	24366750	CARBON FILM, 1/6W 75 OHM J
R937	24366681	CARBON FILM, 1/6W 680 OHM J
R945	24366221	CARBON FILM, 1/6W 220 OHM J
R946	24366221	CARBON FILM, 1/6W 220 OHM J
R960	24383153	OXIDE METAL FILM, 2W 15K OHM J
R963	24383153	OXIDE METAL FILM, 2W 15K OHM J
R966	24383153	OXIDE METAL FILM, 2W 15K OHM J
R977	24366102	CARBON FILM, 1/6W 1K OHM J
R992	24366150	CARBON FILM, 1/6W 15 OHM J
R4310	24366183	CARBON FILM, 1/6W 18K OHM J
R4408	24366361	CARBON FILM, 1/6W 360 OHM J
R4411	24366103	CARBON FILM, 1/6W 10K OHM J
R4412	24366153	CARBON FILM, 1/6W 15K OHM J
R4430	24366752	CARBON FILM, 1/6W 7.5K OHM J
R4473	24366101	CARBON FILM, 1/6W 100 OHM J
R4474	24366101	CARBON FILM, 1/6W 100 OHM J
R4490	24382222	OXIDE METAL FILM, 1W 2.2K OHM J
R4491	24366392	CARBON FILM, 1/6W 3.9K OHM J
R4492	24366103	CARBON FILM, 1/6W 10K OHM J
R4493	24382104	OXIDE METAL FILM, 1W 100K OHM J
R4495	24366473	CARBON FILM, 1/6W 47K OHM J

Location No.	Parts No.	Description
RA01	24366102	CARBON FILM, 1/6W 1K OHM J
RA02	24366102	CARBON FILM, 1/6W 1K OHM J
RA03	24366102	CARBON FILM, 1/6W 1K OHM J
RA04	24366102	CARBON FILM, 1/6W 1K OHM J
RA05	24366103	CARBON FILM, 1/6W 10K OHM J
RA06	24366102	CARBON FILM, 1/6W 1K OHM J
RA07	24366103	CARBON FILM, 1/6W 10K OHM J
RA08	24366102	CARBON FILM, 1/6W 1K OHM J
RA09	24366102	CARBON FILM, 1/6W 1K OHM J
RA10	24366103	CARBON FILM, 1/6W 10K OHM J
RA11	24366103	CARBON FILM, 1/6W 10K OHM J
RA12	24366331	CARBON FILM, 1/6W 330 OHM J
RA13	24366102	CARBON FILM, 1/6W 1K OHM J
RA14	24366331	CARBON FILM, 1/6W 330 OHM J
RA15	24366103	CARBON FILM, 1/6W 10K OHM J
RA16	24366331	CARBON FILM, 1/6W 330 OHM J
RA17	24366102	CARBON FILM, 1/6W 1K OHM J
RA18	24366273	CARBON FILM, 1/6W 27K OHM J
RA19	24366102	CARBON FILM, 1/6W 1K OHM J
RA20	24366103	CARBON FILM, 1/6W 10K OHM J (32Z13G)
RA21	24366103	CARBON FILM, 1/6W 10K OHM J (32Z13G)
RA22	24366472	CARBON FILM, 1/6W 4.7K OHM J (32Z13G)
RA25	24366101	CARBON FILM, 1/6W 100 OHM J
RA26	24366471	CARBON FILM, 1/6W 470 OHM J
RA27	24366102	CARBON FILM, 1/6W 1K OHM J
RA28	24366102	CARBON FILM, 1/6W 1K OHM J
RA29	24366151	CARBON FILM, 1/6W 150 OHM J
RA30	24366103	CARBON FILM, 1/6W 10K OHM J
RA31	24366102	CARBON FILM, 1/6W 1K OHM J
RA32	24366331	CARBON FILM, 1/6W 330 OHM J
RA33	24366472	CARBON FILM, 1/6W 4.7K OHM J
RA34	24366331	CARBON FILM, 1/6W 330 OHM J
RA35	24366472	CARBON FILM, 1/6W 4.7K OHM J
RA36	24366472	CARBON FILM, 1/6W 4.7K OHM J
RA37	24366471	CARBON FILM, 1/6W 470 OHM J
RA38	24366472	CARBON FILM, 1/6W 4.7K OHM J
RA39	24366102	CARBON FILM, 1/6W 1K OHM J
RA41	24366103	CARBON FILM, 1/6W 10K OHM J
RA42	24366103	CARBON FILM, 1/6W 10K OHM J
RA45	24366101	CARBON FILM, 1/6W 100 OHM J
RA46	24366101	CARBON FILM, 1/6W 100 OHM J
RA47	24366101	CARBON FILM, 1/6W 100 OHM J
RA48	24366101	CARBON FILM, 1/6W 100 OHM J
RA49	24366101	CARBON FILM, 1/6W 100 OHM J
RA50	24366102	CARBON FILM, 1/6W 1K OHM J
RA71	24366113	CARBON FILM, 1/6W 11K OHM J
RA72	24366512	CARBON FILM, 1/6W 5.1K OHM J
RA73	24366272	CARBON FILM, 1/6W 2.7K OHM J
RB01	24366182	CARBON FILM, 1/6W 1.8K OHM J
RB01	24366271	CARBON FILM, 1/6W 270 OHM J
RB02	24366474	CARBON FILM, 1/6W 470K OHM J
RB02	24366161	CARBON FILM SB1/6W 160. J
RB03	24366333	CARBON FILM, 1/6W 33K OHM J
RB04	24366123	CARBON FILM, 1/6W 12K OHM J
RB05	24366392	CARBON FILM, 1/6W 3.9K OHM J
RB06	24366392	CARBON FILM, 1/6W 3.9K OHM J
RB07	24366223	CARBON FILM, 1/6W 22K OHM J
RB08	24366471	CARBON FILM, 1/6W 470 OHM J
RB09	24366103	CARBON FILM, 1/6W 10K OHM J
RB09	24366470	CARBON FILM, 1/6W 47 OHM J
RB30	24366105	CARBON FILM, 1/6W 1M OHM J
RB30	24366103	CARBON FILM, 1/6W 10K OHM J
RB31	24366102	CARBON FILM, 1/6W 1K OHM J
RB32	24366332	CARBON FILM, 1/6W 3.3K OHM J
RB33	24366332	CARBON FILM, 1/6W 3.3K OHM J

Location No.	Parts No.	Description
RB35	24366102	CARBON FILM, 1/6W 1K OHM J
RB36	24366102	CARBON FILM, 1/6W 1K OHM J
RB37	24366221	CARBON FILM, 1/6W 220 OHM J
RB38	24366331	CARBON FILM, 1/6W 330 OHM J
RB39	24366331	CARBON FILM, 1/6W 330 OHM J
RB50	24366101	CARBON FILM, 1/6W 100 OHM J
RB51	24366472	CARBON FILM, 1/6W 4.7K OHM J
RC01	24366681	CARBON FILM, 1/6W 680 OHM J
RC02	24366681	CARBON FILM, 1/6W 680 OHM J
RC07	24366681	CARBON FILM, 1/6W 680 OHM J
RC08	24366681	CARBON FILM, 1/6W 680 OHM J
RF01	24366102	CARBON FILM, 1/6W 1K OHM J
RF02	24366102	CARBON FILM, 1/6W 1K OHM J
RF03	24366102	CARBON FILM, 1/6W 1K OHM J
RR02	24366472	CARBON FILM, 1/6W 4.7K OHM J
RR03	24366103	CARBON FILM, 1/6W 10K OHM J
RR04	24366333	CARBON FILM, 1/6W 33K OHM J
RR05	24366103	CARBON FILM, 1/6W 10K OHM J
RR06	24366182	CARBON FILM, 1/6W 1.8K OHM J
RR10	24366101	CARBON FILM, 1/6W 100 OHM J
RR11	24366101	CARBON FILM, 1/6W 100 OHM J
RR12	24366101	CARBON FILM, 1/6W 100 OHM J
RR13	24366121	CARBON FILM, 1/6W 120 OHM J
RR14	24366121	CARBON FILM, 1/6W 120 OHM J
RR15	24366121	CARBON FILM, 1/6W 120 OHM J
RV01	24366101	CARBON FILM, 1/6W 100 OHM J
RV02	24366101	CARBON FILM, 1/6W 100 OHM J
RV04	24366472	CARBON FILM, 1/6W 4.7K OHM J
RV05	24366472	CARBON FILM, 1/6W 4.7K OHM J
RV07	24366472	CARBON FILM, 1/6W 4.7K OHM J
RV09	24366472	CARBON FILM, 1/6W 4.7K OHM J
RV12	24366101	CARBON FILM, 1/6W 100 OHM J
RV13	24366101	CARBON FILM, 1/6W 100 OHM J
RV15	24366472	CARBON FILM, 1/6W 4.7K OHM J
RV16	24366472	CARBON FILM, 1/6W 4.7K OHM J
RV17	24366102	CARBON FILM, 1/6W 1K OHM J
RV18	24366472	CARBON FILM, 1/6W 4.7K OHM J (32Z13B)
RV19	24366222	CARBON FILM, 1/6W 2.2K OHM J
RV20	24366104	CARBON FILM, 1/6W 100K OHM J
RV21	24366104	CARBON FILM, 1/6W 100K OHM J
RV22	24366223	CARBON FILM, 1/6W 22K OHM J
RV23	24366822	CARBON FILM, 1/6W 8.2K OHM J
RV24	24366750	CARBON FILM, 1/6W 75 OHM J
RV25	24366222	CARBON FILM, 1/6W 2.2K OHM J (32Z13B)
RV26	24366750	CARBON FILM, 1/6W 75 OHM J
RV27	24366750	CARBON FILM, 1/6W 75 OHM J
RV28	24552101	OXIDE METAL FILM, 1/2W 100 OHM J
RV29	24366102	CARBON FILM, 1/6W 1K OHM J
RV30	24366101	CARBON FILM, 1/6W 100 OHM J
RV31	24366102	CARBON FILM, 1/6W 1K OHM J
RV32	24366102	CARBON FILM, 1/6W 1K OHM J
RV33	24366102	CARBON FILM, 1/6W 1K OHM J
RV34	24366104	CARBON FILM, 1/6W 100K OHM J
RV35	24366104	CARBON FILM, 1/6W 100K OHM J
RV36	24366104	CARBON FILM, 1/6W 100K OHM J
RV37	24366104	CARBON FILM, 1/6W 100K OHM J
RV38	24366750	CARBON FILM, 1/6W 75 OHM J
RV39	24366750	CARBON FILM, 1/6W 75 OHM J
RV40	24366822	CARBON FILM, 1/6W 8.2K OHM J
RV41	24366223	CARBON FILM, 1/6W 22K OHM J
RV42	24366103	CARBON FILM, 1/6W 10K OHM J
RV43	24366103	CARBON FILM, 1/6W 10K OHM J
RV45	24366750	CARBON FILM, 1/6W 75 OHM J
RV46	24366750	CARBON FILM, 1/6W 75 OHM J
RV48	24366750	CARBON FILM, 1/6W 75 OHM J

Location No.	Parts No.	Description
RV49	24366750	CARBON FILM, 1/6W 75 OHM J
RV53	24366102	CARBON FILM, 1/6W 1K OHM J
RV54	24366222	CARBON FILM, 1/6W 2.2K OHM J
RV55	24366102	CARBON FILM, 1/6W 1K OHM J
RV57	24552101	OXIDE METAL FILM, 1/2W 100 OHM J
RV58	24366101	CARBON FILM, 1/6W 100 OHM J
RV59	24366102	CARBON FILM, 1/6W 1K OHM J
RV60	24366561	CARBON FILM, 1/6W 560 OHM J (32Z13B)
RV61	24366561	CARBON FILM, 1/6W 560 OHM J (32Z13B)
RV62	24366103	CARBON FILM, 1/6W 10K OHM J
RV63	24366103	CARBON FILM, 1/6W 10K OHM J
RV64	24366103	CARBON FILM, 1/6W 10K OHM J
RV80	24366681	CARBON FILM, 1/6W 680 OHM J
RV83	24366681	CARBON FILM, 1/6W 680 OHM J
RV99	24366750	CARBON FILM, 1/6W 75 OHM J
RW01	24366681	CARBON FILM, 1/6W 680 OHM J
RW02	24366681	CARBON FILM, 1/6W 680 OHM J
<b>COILS &amp; TRANSFORMERS</b>		
L101	23238562	COIL, PEAKING, TRF4109AJ
L102	23238561	COIL, PEAKING-0.82MMHK COLTRF4R82AJ
L103	23238554	COIL, PEAKING 0.22MMHK
L104	23221803	COIL, CHOKE, TLN3040D
L110	23289846	COIL, PEAKING, TRF4101AT
L114	23289836	COIL, PEAKING, TRF42R2AT
L130	23289841	COLTRF4150AT (32Z13B)
L134	23289840	COIL, PEAKING, TRF4100AT
L161	23262300	COIL, IF COIL 40MHZ UK TRF1246AV
L161	23262296	COLTRF1244AV (32Z13B)
L183	23289120	COIL, PEAKING-12MMHJ COLTRF4120AF
L301	23103859	COIL, CHOKE, TEM2011
L302	23289846	COIL, PEAKING, TRF4101AT
L410	23103859	COIL, CHOKE, TEM2011
L441	23233971	COIL, HORIZ.LINEARITY, TLN2144BG
L442	23248122	COIL, CHOKE TLN3384D
L445	23221684	COIL, CHOKE, TLN3191D
L449	23103859	COIL, CHOKE, TEM2011
L461	23248186	COIL, CHOKE, TLN3346AD
L491	23248183	COIL, CHOKE TLN3343AD
L492	23222655	COIL, WIDTH TLN2074
L511	23289840	COIL, PEAKING, TRF4100AT
L512	23289840	COIL, PEAKING, TRF4100AT
L513	23289840	COIL, PEAKING, TRF4100AT
L525	23289840	COIL, PEAKING, TRF4100AT
L701	23289840	COIL, PEAKING, TRF4100AT
L702	23261974	COIL, FERRITE BEAD, HC5-035
L704	23103859	COIL, CHOKE, TEM2011
L705	23103859	COIL, CHOKE, TEM2011
L801	23217522	TRANSFORMER, CHOKE TS15 58M0.9A TPW2037BS
L811	23103859	COIL, CHOKE, TEM2011
L860	23289836	COIL, PEAKING, TRF42R2AT
L883	23221747	COIL, CHOKE, TRF9253D
L885	23248073	COIL, CHOKE, TLN3299D
L886	23103859	COIL, CHOKE, TEM2011
L889	23280016	COIL, PEAKING, TRF4100AZ
L892	23103859	COIL, CHOKE, TEM2011
L893	23280016	COIL, PEAKING, TRF4100AZ
L894	23289840	COIL, PEAKING, TRF4100AT
L896	23103859	COIL, CHOKE, TEM2011
△ L901	23200404	COIL, DG0.50CU60T-2LOOP 32 TSB-2395AM
L908	23289840	COIL, PEAKING, TRF4100AT
L911	23289846	COIL, PEAKING, TRF4101AT
LA02	23103859	COIL, CHOKE, TEM2011
LA03	23289834	COIL, PEAKING 1.00MMHK COLTRF41R0AT

Location No.	Parts No.	Description
LA04	23103859	COIL, CHOKE, TEM2011
LA39	23103859	COIL, CHOKE, TEM2011
LB30	23289840	COIL, PEAKING, TRF4100AT
LB31	23103859	COIL, CHOKE, TEM2011
LC01	23289834	COIL, PEAKING 1.00MMHK COLTRF41R0AT
LC02	23289834	COIL, PEAKING 1.00MMHK COLTRF41R0AT
LC03	23238714	COIL, PEAKING, TRF4100AJ
LC04	23238714	COIL, PEAKING, TRF4100AJ
LC05	23238714	COIL, PEAKING, TRF4100AJ
LC06	23238714	COIL, PEAKING, TRF4100AJ
LC07	23238714	COIL, PEAKING, TRF4100AJ
LC08	23238714	COIL, PEAKING, TRF4100AJ
LC09	23103937	FILTER, EM2004
LC20	23103845	COIL, COMMONMODE, TEM2030AY
LC21	23103845	COIL, COMMONMODE, TEM2030AY
LV49	23103852	COIL, FILTER, TEM2028AH
T400	23224364	TRANSFORMER, TLN2168AH
T401	23224373	TRANSFORMER, HORIZ DRV TLN1100AM
△ T461A	23192941	ANODECAP ASSEMBLY, TCCP5158
△ T461B	23501175	CABLE ASSY, FOCUS CABLE FOCUS
△ T461C	23501176	CABLE ASSY, FOCUS
△ T461D	23236447	TRANSFORMER, HORIZ OUTPUT TFB4115AR
T801	23211736	COIL, LINE FILTER, TRF3231AL
T802	23211736	COIL, LINE FILTER, TRF3231AL (32Z13G)
△ T862	23217509	TRANSFORMER, CONVERTER TPW3475AD
<b>SEMICONDUCTORS</b>		
Q101	23114458	TRANSISTOR, RN1206 (32Z13G)
Q102	23114458	TRANSISTOR, RN1206 (32Z13G)
Q104	23114815	TRANSISTOR, 2SC388ATM(FA)
Q106	23114458	TRANSISTOR, RN1206 (32Z13G)
Q107	23114815	TRANSISTOR, 2SC388ATM(FA)
Q130	23314794	TRANSISTOR, VCEO=50V TO-92 2PC1815Y (32Z13G)
Q131	23314794	TRANSISTOR, VCEO=50V TO-92 2PC1815Y
Q132	23314791	TRANSISTOR, VCEO=50V TO-92 2PA1015Y
Q200	23114756	TRANSISTOR, 2SC2482
Q301	23319787	IC, LA7833S
Q301B	70391355	SCREW, 3X8MM
Q302	B01A0473	IC, E-W CORRECTION IC TA
Q303	23314791	TRANSISTOR, VCEO=50V TO-92 2PA1015Y
Q370	23314791	TRANSISTOR, VCEO=50V TO-92 2PA1015Y
Q371	A6002020	TRANSISTOR, RN1202
Q371	A6002020	TRANSISTOR, RN1202
Q372	A6002020	TRANSISTOR, RN1202
Q373	A6002020	TRANSISTOR, RN1202
Q402	23114755	TRANSISTOR, 2SC2482FA-1
Q404	23314955	TRANSISTOR, 2SD2553(FA)
Q404C	72471082	SCREW, 3X10MM
Q411	23314794	TRANSISTOR, VCEO=50V TO-92 2PC1815Y
Q412	23314794	TRANSISTOR, VCEO=50V TO-92 2PC1815Y
Q413	23314791	TRANSISTOR, VCEO=50V TO-92 2PA1015Y
Q420	23314141	TRANSISTOR, 2SC3852
Q420B	70391355	SCREW, 3X8MM
Q421	23314794	TRANSISTOR, VCEO=50V TO-92 2PC1815Y
Q422	23314794	TRANSISTOR, VCEO=50V TO-92 2PC1815Y
Q423	23314794	TRANSISTOR, VCEO=50V TO-92 2PC1815Y
Q424	23314794	TRANSISTOR, VCEO=50V TO-92 2PC1815Y
Q430	23314141	TRANSISTOR, 2SC3852
Q430B	70391355	SCREW, 3X8MM
Q432	23314794	TRANSISTOR, VCEO=50V TO-92 2PC1815Y
Q438	23314791	TRANSISTOR, VCEO=50V TO-92 2PA1015Y
Q4490	A8641063	PHOTO COUPLER, TLP521-1 (FA)
Q4491	23314917	TRANSISTOR, 2SK2003-01MR

Location No.	Parts No.	Description
Q4493	23314794	TRANSISTOR, VCEO=50V TO-92 2PC1815Y
Q451	23314794	TRANSISTOR, VCEO=50V TO-92 2PC1815Y
Q460	23314850	TRANSISTOR, 2SA1788, E
Q460B	72471082	SCREW, 3X10MM
Q461	23314794	TRANSISTOR, VCEO=50V TO-92 2PC1815Y
Q462	23314794	TRANSISTOR, VCEO=50V TO-92 2PC1815Y
Q470	23314794	TRANSISTOR, VCEO=50V TO-92 2PC1815Y
Q470	23114541	TRANSISTOR, 2SA1320
Q471	23314791	TRANSISTOR, VCEO=-50V TO-92 2PA1015Y
Q471	23314794	TRANSISTOR, VCEO=50V TO-92 2PC1815Y
Q472	23314794	TRANSISTOR, VCEO=50V TO-92 2PC1815Y
Q472	23314794	TRANSISTOR, VCEO=50V TO-92 2PC1815Y
Q473	23314791	TRANSISTOR, VCEO=-50V TO-92 2PA1015Y
Q490	23314794	TRANSISTOR, VCEO=50V TO-92 2PC1815Y
Q491	23314794	TRANSISTOR, VCEO=50V TO-92 2PC1815Y
Q501	B01A2479	IC, TB1251CN
Q511	23314794	TRANSISTOR, VCEO=50V TO-92 2PC1815Y
Q512	B0386235	YUV/RGB SW IC DIP 16 TA1287P
Q515	23314791	TRANSISTOR, VCEO=-50V TO-92 2PA1015Y
Q516	23314791	TRANSISTOR, VCEO=-50V TO-92 2PA1015Y
Q517	23314794	TRANSISTOR, VCEO=50V TO-92 2PC1815Y
Q518	23314794	TRANSISTOR, VCEO=50V TO-92 2PC1815Y
Q601	23114623	TRANSISTOR, 2SC2878-A(TEM
Q602	23114623	TRANSISTOR, 2SC2878-A(TEM
Q603	23114478	TRANSISTOR, RN2004
Q604	23314791	TRANSISTOR, VCEO=-50V TO-92 2PA1015Y
Q608	B0376856	IC, TA8211AH
Q612	23314794	TRANSISTOR, VCEO=50V TO-92 2PC1815Y
Q613	23314794	TRANSISTOR, VCEO=50V TO-92 2PC1815Y
Q618	23114623	TRANSISTOR, 2SC2878-A(TEM
Q619	23114623	TRANSISTOR, 2SC2878-A(TEM
Q671	23114623	TRANSISTOR, 2SC2878-A(TEM
Q673	23114623	TRANSISTOR, 2SC2878-A(TEM
Q701	23314791	TRANSISTOR, VCEO=-50V TO-92 2PA1015Y
Q705	23314794	TRANSISTOR, VCEO=50V TO-92 2PC1815Y
Q706	23314794	TRANSISTOR, VCEO=50V TO-92 2PC1815Y
Q707	23114437	TRANSISTOR, 2SC752GTM-Y
Q709	23314794	TRANSISTOR, VCEO=50V TO-92 2PC1815Y
Q710	23314791	TRANSISTOR, VCEO=-50V TO-92 2PA1015Y
Q711	A6550640	TRANSISTOR, 2SA1837
Q711B	70391355	SCREW, 3X8MM
Q712	A6369650	TRANSISTOR, 2SC4793
Q712B	70391355	SCREW, 3X8MM
Q719	23314794	TRANSISTOR, VCEO=50V TO-92 2PC1815Y
Q801	23135023	IC, HYBRID VDSS=800V STR-F6667B
Q801B	72471082	SCREW, 3X10MM
Q802	23314141	TRANSISTOR, 2SC3852
Q802B	70391355	SCREW, 3X8MM
Q805	23314794	TRANSISTOR, VCEO=50V TO-92 2PC1815Y
△ Q826	23904427	IC, PHOTO COUPLER, TLP621(GR-LF2
Q827	23319693	IC, SE116N, LF4
Q840	23318299	IC, L78MR05-FA
Q840B	70391355	SCREW, 3X8MM
Q841	23314794	TRANSISTOR, VCEO=50V TO-92 2PC1815Y
Q842	23314794	TRANSISTOR, VCEO=50V TO-92 2PC1815Y
Q861	23314141	TRANSISTOR, 2SC3852
Q861B	70391355	SCREW, 3X8MM
Q901	A6363200	TRANSISTOR, 2SC3619
Q902	23314794	TRANSISTOR, VCEO=50V TO-92 2PC1815Y
Q903	A6363200	TRANSISTOR, 2SC3619
Q904	23314794	TRANSISTOR, VCEO=50V TO-92 2PC1815Y
Q905	A6363200	TRANSISTOR, 2SC3619
Q906	23314794	TRANSISTOR, VCEO=50V TO-92 2PC1815Y
Q907	23114422	TRANSISTOR, 2SA562TM-Y(T
Q908	23114429	TRANSISTOR, 2SC2120-Y(TE

Location No.	Parts No.	Description
Q4200	B01A0156	IC, PROCESSOR, TA1318N
QA01	23000703	IC, 8BIT TV/TEXT MCU 64K SAA5563PS/M3/
QA02	23905666	IC, 16384BITS AT24C1610PC
QA03	23114733	TRANSISTOR, 2SC2655-Y
QA04	23114458	TRANSISTOR, RN1206 (32Z13G)
QA05	23314794	TRANSISTOR, VCEO=50V TO-92 2PC1815Y
QB01	23314791	TRANSISTOR, VCEO=-50V TO-92 2PA1015Y
QB02	23314794	TRANSISTOR, VCEO=50V TO-92 2PC1815Y
QB30	23314791	TRANSISTOR, VCEO=-50V TO-92 2PA1015Y
QB30	23906946	IC, RAMDAC 3CH CM0016AD
QF01	23314794	TRANSISTOR, VCEO=50V TO-92 2PC1815Y
QR01	70129053	IC, SW 2IN 1OUT 3CIRCUIT ALLCLP BA7603
QR02	23114437	TRANSISTOR, 2SC752GTM-Y
QR03	23314794	TRANSISTOR, VCEO=50V TO-92 2PC1815Y
QR04	23114460	TRANSISTOR, RN1204
QR05	23114460	TRANSISTOR, RN1204
QV01	B0385655	IC, TA1219N
QV02	23314794	TRANSISTOR, VCEO=50V TO-92 2PC1815Y
QV03	23314791	TRANSISTOR, VCEO=-50V TO-92 2PA1015Y
QV04	23314794	TRANSISTOR, VCEO=50V TO-92 2PC1815Y
QV05	23114623	TRANSISTOR, 2SC2878-A(TEM
QV06	23114623	TRANSISTOR, 2SC2878-A(TEM
QV07	23114478	TRANSISTOR, RN2004
QV08	23314794	TRANSISTOR, VCEO=50V TO-92 2PC1815Y
QV11	23314791	TRANSISTOR, VCEO=-50V TO-92 2PA1015Y
D101	23115599	DIODE, 1N4148 (32Z13G)
D102	23357354	DIODE, MA2C858 (32Z13G)
D110	23357354	DIODE, MA2C858 (32Z13G)
D190	23316755	DIODE, ZENER VZ30.90-32.50 DO34 MTZ J 33C
D224	23115599	DIODE, 1N4148
D240	23115599	DIODE, 1N4148
D301	23118479	DIODE, BYD33J
D302	23118479	DIODE, BYD33J
D303	23316794	DIODE, SC570A
D304	23118479	DIODE, BYD33J
D308	23118479	DIODE, BYD33J
D312	23115599	DIODE, 1N4148
D320	23115599	DIODE, 1N4148
D327	23316717	DIODE, ZENER, MTZ J 11C
D336	23316672	DIODE, ZENER, MTZJ5.6B
D337	23316672	DIODE, ZENER, MTZJ5.6B
D370	23316658	DIODE, ZENER, MTZJ3.6A
D371	23115599	DIODE, 1N4148
D373	23316690	DIODE, ZENER, MTZJ10B
D374	23115599	DIODE, 1N4148
D377	23118479	DIODE, BYD33J
D378	23118479	DIODE, BYD33J
D401	23316685	DIODE, ZENER, MTZJ8.2C
D403	23115599	DIODE, 1N4148
D406	23118479	DIODE, BYD33J
D421	23316680	DIODE, ZENER, MTZJ7.5A
D422	23316726	DIODE, ZENER, MTZJ15C
D431	23316670	DIODE, ZENER, MTZJ5.1C
D432	23316670	DIODE, ZENER, MTZJ5.1C
D436	23115599	DIODE, 1N4148
D441	23316690	DIODE, ZENER, MTZJ10B
D4410	23115599	DIODE, 1N4148
D4411	23115599	DIODE, 1N4148
D4412	23115599	DIODE, 1N4148
D460	23118479	DIODE, BYD33J
D461	23316803	DIODE, VRSM=600V IF=5A FR 220FP FMU-G16S
D461B	70391355	SCREW, 3X8MM
D463	23115599	DIODE, 1N4148

Location No.	Parts No.	Description
D464	23316725	DIODE, ZENER, MTZJ15B
D466	23316672	DIODE, ZENER, MTZJ5.6B
D467	23118479	DIODE, BYD33J
D470	23316670	DIODE, ZENER, MTZJ5.1C
D474	23316719	DIODE, ZENER, MTZJ12B
D488	23115599	DIODE, 1N4148
D490	23115599	DIODE, 1N4148
D492	23115599	DIODE, 1N4148
D498	23115599	DIODE, 1N4148
D498	23316745	DIODE, ZENER, MTZ J 27A
D499	23115599	DIODE, 1N4148
D499	23115599	DIODE, 1N4148
D599	23316717	DIODE, ZENER, MTZ J 11C
D603	23115599	DIODE, 1N4148
D604	23115599	DIODE, 1N4148
D605	23115599	DIODE, 1N4148
D636	23115599	DIODE, 1N4148
D637	23115599	DIODE, 1N4148
D638	23115599	DIODE, 1N4148
D639	23115599	DIODE, 1N4148
D704	23115599	DIODE, 1N4148
D705	23115599	DIODE, 1N4148
D715	23115599	DIODE, 1N4148
D721	23115599	DIODE, 1N4148
D801	23357041	DIODE, LNSB60-F05
D804	23316725	DIODE, ZENER, MTZJ15B
D805	23357012	DIODE, 1SS244
D806	23118479	DIODE, BYD33J
D807	23316746	DIODE, ZENER, MTZJ27B
D810	23316738	DIODE, ZENER, MTZJ22B
D811	23115599	DIODE, 1N4148
D815	23316746	DIODE, ZENER, MTZJ27B
D817	23115599	DIODE, 1N4148
D818	23316738	DIODE, ZENER, MTZJ22B
D828	23115599	DIODE, 1N4148
D842	23316724	DIODE, ZENER, MTZJ15A
D844	23316715	DIODE, ZENER, MTZJ11A
D848	23316675	DIODE, ZENER, MTZJ6.2B
D855	23115599	DIODE, 1N4148
D861	23316673	DIODE, ZENER, MTZJ5.6C
D862	23316674	DIODE, ZENER, MTZJ6.2A
D883	23118338	DIODE, RU4AM LF-K2
D885	23118094	DIODE, EU2A
D892	23118052	DIODE, RU4Z LF-L1
D896	23118479	DIODE, BYD33J
D901	23115599	DIODE, 1N4148
D903	23115599	DIODE, 1N4148
D904	23115599	DIODE, 1N4148
D905	23115599	DIODE, 1N4148
D906	23115599	DIODE, 1N4148
D907	23115599	DIODE, 1N4148
D908	23115599	DIODE, 1N4148
D909	23115599	DIODE, 1N4148
D910	23115599	DIODE, 1N4148
D911	23115599	DIODE, 1N4148
DA02	23115599	DIODE, 1N4148
DA03	23115599	DIODE, 1N4148
DA04	23115599	DIODE, 1N4148
DA05	23115599	DIODE, 1N4148
DA06	23118538	DIODE, ZENER, RD6.2ES
DA07	23316661	MTZJ3.9B
DB01	23358564	LED, LAMP RED SLR-56VC3FPQ
DB02	23358563	LED, LAMP GREEN SLR-56MC3FPQR
DR06	23115599	DIODE, 1N4148
DV06	23115599	DIODE, 1N4148

Location No.	Parts No.	Description
<b>MISCELLANEOUS</b>		
B221	23037312	SCREW
BB10B	23903022	CONNECTOR, BASE B-B 8P 2.5 JST
BB11B	23903022	CONNECTOR, BASE B-B 8P 2.5 JST
BB12B	23903022	CONNECTOR, BASE B-B 8P 2.5 JST
BB13B	23903022	CONNECTOR, BASE B-B 8P 2.5 JST
BB20B	23903022	CONNECTOR, BASE B-B 8P 2.5 JST
△ F470	23144873	FUSE, 1A, 250V
F470A	23165433	FUSE HOLDER, 5.2 SOC
△ F801	23144508	FUSE, CARTRIDGE 5.2X20 250V 4.0A
F801A	23165433	FUSE HOLDER, 5.2 SOC
△ F802	23144506	FUSE, CARTRIDGE 5.2X20 250V 2.5A
F802A	23165433	FUSE HOLDER, 5.2 SOC
G101	24366123	CARBON FILM, 1/6W 12K OHM J (32Z13G)
G103	24366820	CARBON FILM, 1/6W 82 OHM J
G108	23238562	COIL, PEAKING, TRF4109AJ
G111	23238714	COIL, PEAKING, TRF4100AJ
G112	23238714	COIL, PEAKING, TRF4100AJ
G113	23357354	DIODE, MA2C858 (32Z13G)
G131	24366271	CARBON FILM, 1/6W 270 OHM J
G299	24366103	CARBON FILM, 1/6W 10K OHM J
G309	23118479	DIODE, BYD33J
G312	24366562	CARBON FILM, 1/6W 5.6K OHM J
G337	24366122	CARBON FILM, 1/6W 1.2K OHM J
G430	23115532	DIODE, ERB12-01
G465	23316672	DIODE, ZENER, MTZJ5.6B
G810	23103859	COIL, CHOKE, TEM2011 (32Z13G)
G828	23103859	COIL, CHOKE, TEM2011 (32Z13G)
GC02	23261959	COIL, CHOKE, TRF9240
GC03	23261959	COIL, CHOKE, TRF9240
GC04	23261959	COIL, CHOKE, TRF9240
GV06	24366101	CARBON FILM, 1/6W 100 OHM J
GV08	24366101	CARBON FILM, 1/6W 100 OHM J
GV11	24366101	CARBON FILM, 1/6W 100 OHM J
GV14	24366101	CARBON FILM, 1/6W 100 OHM J
GV18	23238714	COIL, PEAKING, TRF4100AJ
H002	23148767	MODULE, NICAM/IGR MPSE22A
KB01	23904946	IC, RPM-676CBR-S
P661	23363607	JACK, HEAD PHONE, 3.5MM
△ P801	23372151	POWER CORD, AC250V3A L/FUSE13A GB13F1 FUSE13A (32Z13B)
△ P801	23372052	AC CORD CEE (32Z13G)
△ P801A	23368013	CONNECTOR, PLUG, 2P 11.88MM W VT-JST
PH01	23365598	21 PIN CONNECTOR 2100RFT 21 PIN CONNECTOR
PH02	23365598	21 PIN CONNECTOR 2100RFT 21 PIN CONNECTOR
△ S801	23344416	SWITCH, POWER PUSH 2C1P ESB92D21B
SA01	23145430	SWITCH, PUSH SKHHLMA010
SA02	23145430	SWITCH, PUSH SKHHLMA010
SA03	23145430	SWITCH, PUSH SKHHLMA010
SA04	23145430	SWITCH, PUSH SKHHLMA010
SA05	23145430	SWITCH, PUSH SKHHLMA010
SA06	23145430	SWITCH, PUSH SKHHLMA010
SR40	23146564	RELAY, DC12V, TV5, DG-3
△ SR83	23146570	RELAY, DC12V, 2M OMR, G5PA-2 DC12
△ V901A	23903152	SOCKET, ISD13S-E #13 ICE ISD-13S-E #13
W661	23351128	SPEAKER, SPK1389, 60X120 16-OHM 6W
W662	23351128	SPEAKER, SPK1389, 60X120 16-OHM 6W
X4010	23153721	CERAMIC RESONATOR, 503KHZ
X501	23153979	CRYSTAL, 4.43MHZ PAL-APC
XA01	23153930	CRYSTAL
Z101	23303231	FILTER, FILTER FOR VIDEO 38.9M K3953M
Z102	23303237	FILTER, FILTER FOR I-NICAM(38.9 K9353M

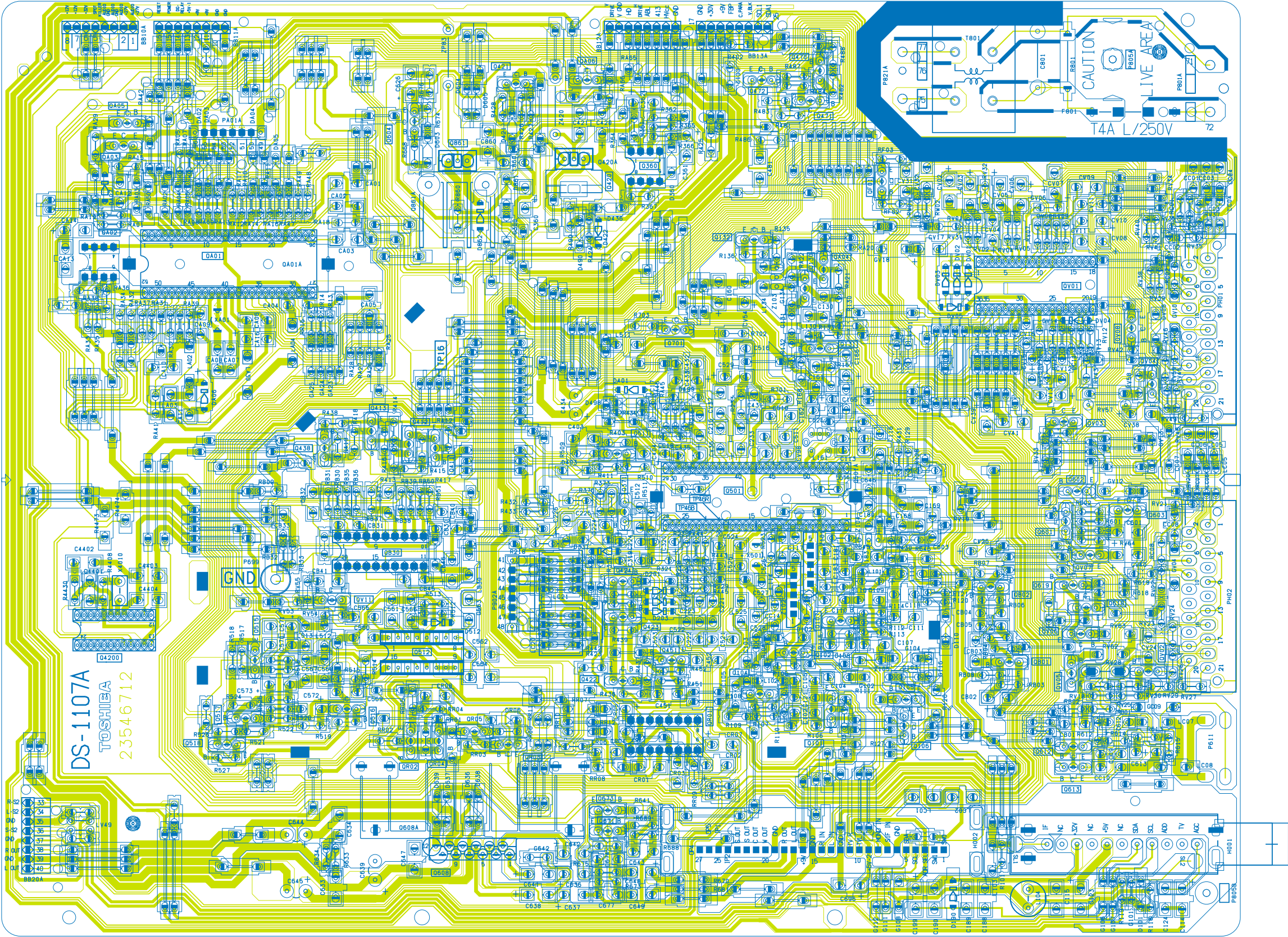
Location No.	Parts No.	Description
Z102	23303232	K9453M (32Z13G)
Z103	23107926	FILTER, TCF1012
Z103	23303189	FILTCF1114 (32Z13G)
Z104	23303072	CERAMIC FILTER, TCF1089
Z420	23144539	PROTECTOR, 491SERIES 125V 2A
Z891	23144543	PROTECTOR, 491SERIES 125V 5A
Z898	23144542	PROTECTOR, 491SERIES 125V 4A
Z902	23103839	CORE, FERRITE, TFE1012
ZP83	23144536	PROTECTOR, 491SERIES 125V 1A
<b>PC BOARD ASSEMBLIES</b>		
* U901	23786507	PW UNIT CRT-D&DSM, PWU PD0014B
* U902	23786508	PW UNIT SIGNAL, PWU PD0015C (32Z13B)
* U902	23786640	PW UNIT SIGNAL, PWU PD0015D (32Z13G)
* U903	23786509	PW UNIT POW&DEF, PWU PD0016C (32Z13B)
* U903	23786792	PW UNIT POW&DEF, PWU PD0016D (32Z13G)
* U904A	23786016	PW UNIT CONT-1, PWU PD0017A-1
* U904B	23786017	PW UNIT CONT-2, PWU PD0017A-2
<b>PICTURE TUBE</b>		
△ V901	23312885	PICTURE TUBE, , 32W 50HZ FLAT W76EJS011X107
<b>TUNER</b>		
H001	23321413	TUNER, ALPS UK TEDB7-205A (32Z13B)
H001	23321370	TUNER, TN-EGA51L (32Z13G)
<b>ACCESSORIES</b>		
K902	23306363	REMOCON HAND UNIT IR, CTVPAL CT-90040
Y101	23565270	OWNER'S MANUAL, ENGLISH 28Z13B 32/28Z13B(ENG
Y101	23565287	OWNER'S MANUAL, ENGLISH 32Z13G
Y102	23565288	OWNER'S MANUAL, FRENCH 32Z13G
Y103	23565289	OWNER'S MANUAL, GERMAN 32Z13G
Y104	23565290	OWNER'S MANUAL, ITALIAN 32Z13G
Y105	23565291	OWNER'S MANUAL, SPANISH 32Z13G
<b>CABINET PARTS</b>		
A201S	23540689	COVER, FRONT COVER FOR SERVICE FRONTCOVER S
A214	23035412	SCREW
A215	23035412	SCREW
A231	23445395	BUTTON, BUTTON(POWER) 32ZD08G 32ZD08G;B995158EP1
A236	23527188	GRILLE, SPEAKER GRILLE(L/R) 32 GRILLE
A238	23527130	PANEL(CENTRE), 32ZD06G
A241	70368125	PUSH CATCH
A242	23427819	DOOR, DOOR PROPER R 32ZD08G 32ZD08G;A995307EP1
A243	23427873	DOOR, DOOR PROPER L 28Z05B
A701	23064260	CARTON, CARTON 32Z07B
A702	23946038	PACKING, BOTTOM PACKING 32ZD08 32ZD08G;A995338E
A703	23946037	PACKING, TOP PACKING 32ZD08G 32ZD08G;A995337E

Location No.	Parts No.	Description

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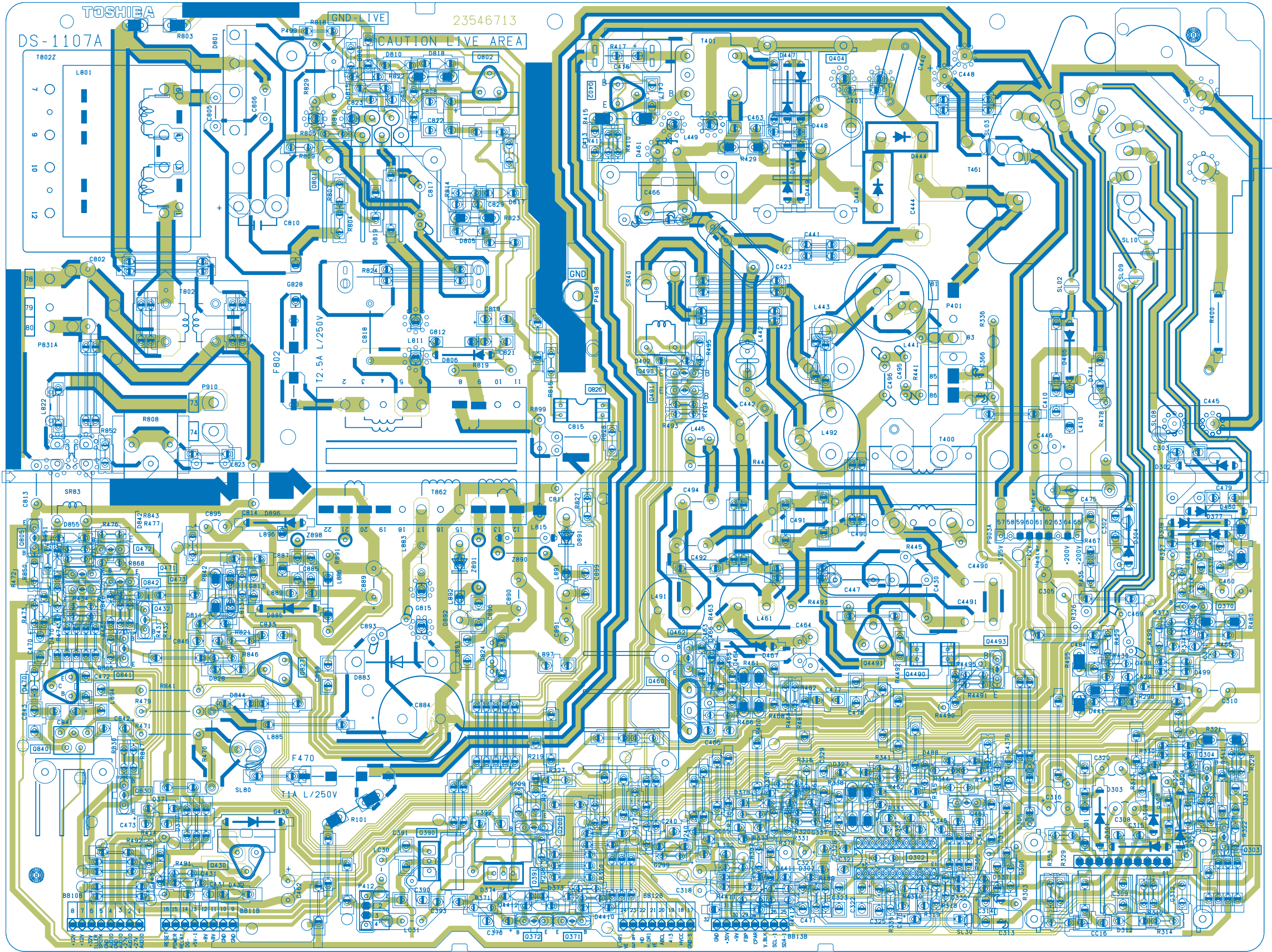


SIGNAL BOARD PD0015C  
SIGNAL BOARD PD0015D  
BOTTOM (FOIL) SIDE

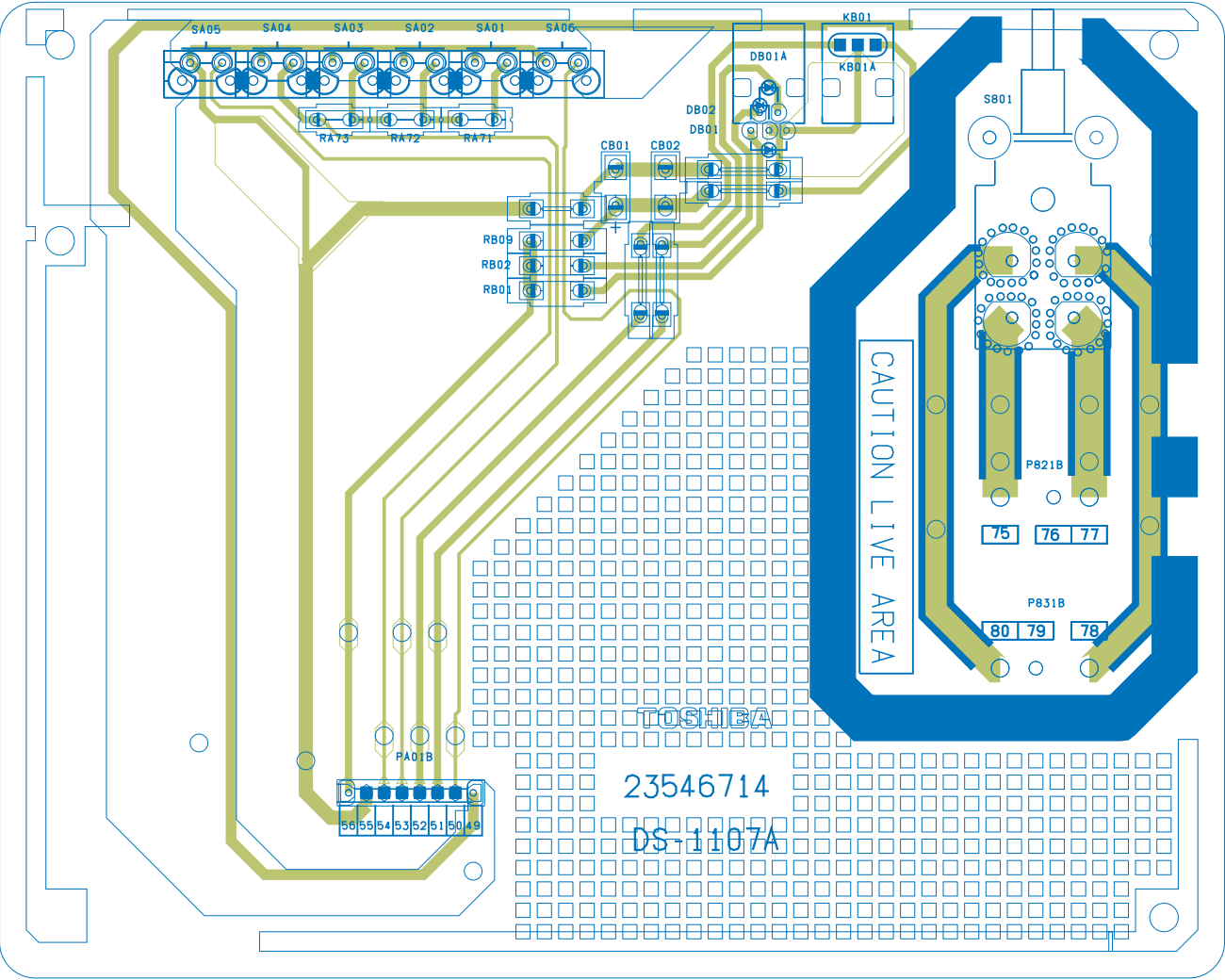




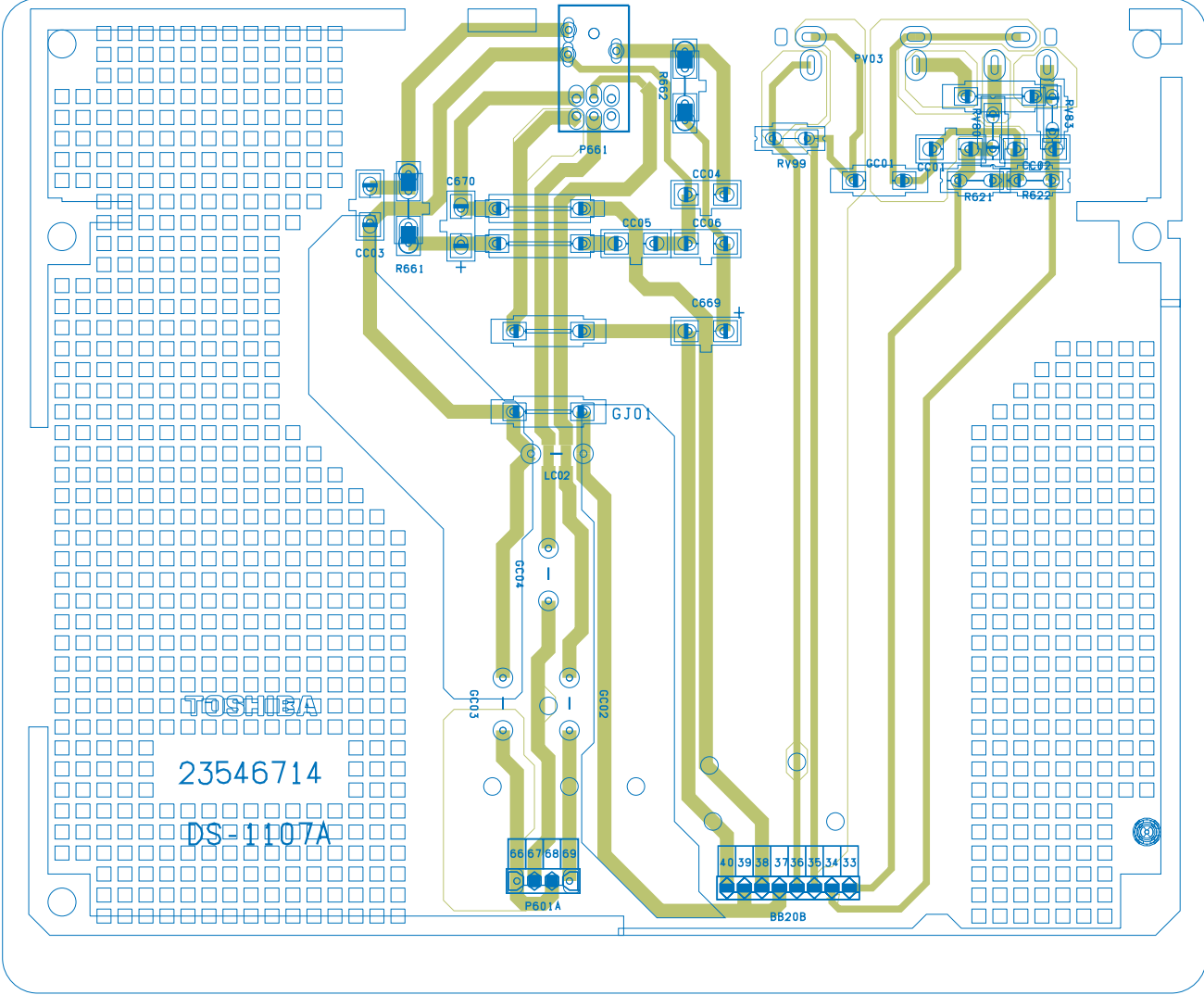
POWER/DEF BOARD PD0016C  
POWER/DEF BOARD PD0016D  
BOTTOM (FOIL) SIDE



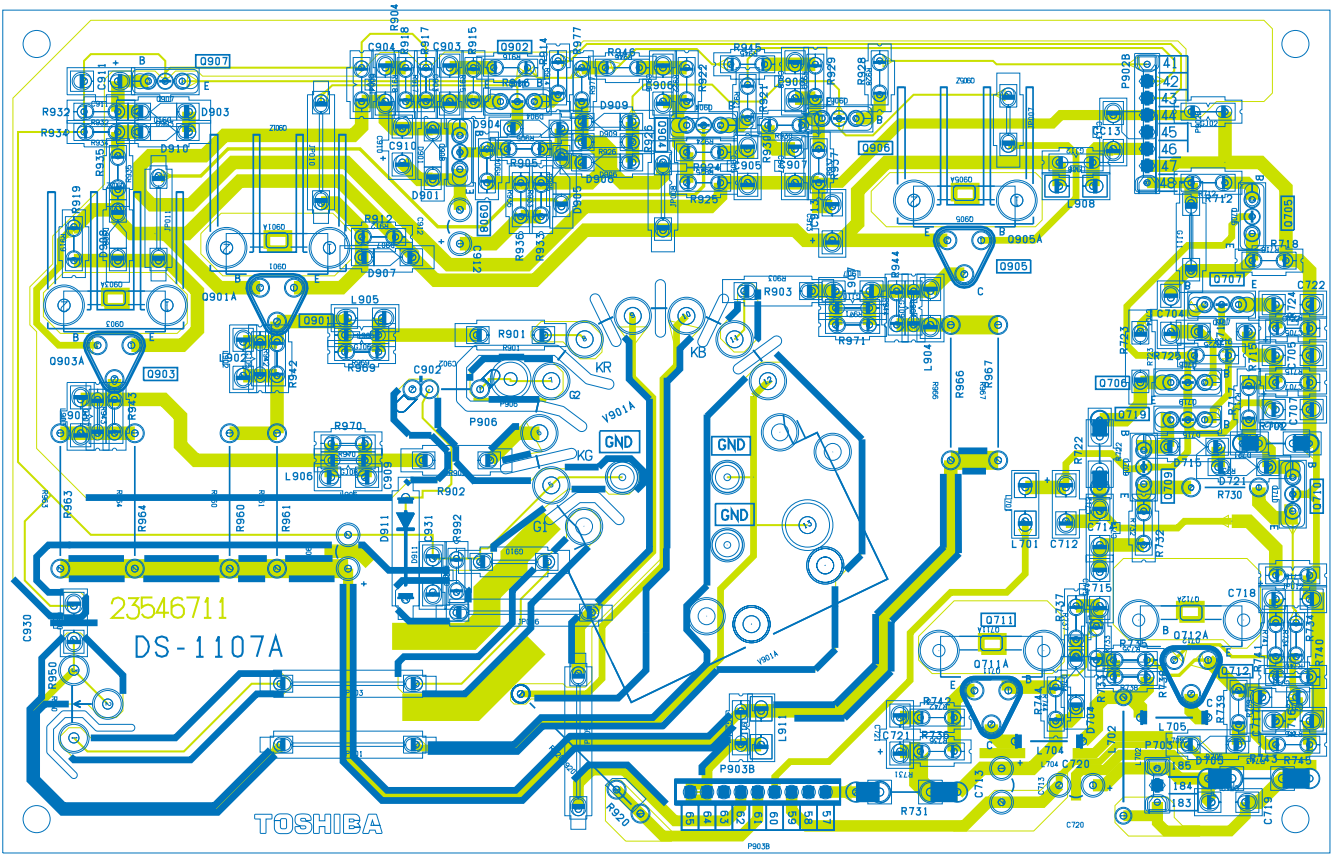
**CONT-1 BOARD PD0017A-1**  
**BOTTOM (FOIL) SIDE**



**CONT-2 BOARD PD0017A-2**  
**BOTTOM (FOIL) SIDE**



# **CRT-D/DSM BOARD PD0014B** **BOTTOM (FOIL) SIDE**



# **TERMINAL VIEW OF TRANSISTORS**

<p>① 2SD2253 (old) 2SC5243 2SC5570</p>	<p>② 2SC3852 2SD1763A 2SC1569 2SC4544 2SA1788 2SA1306 2SA1186A</p>	<p>③ 2SC752GTM 2SC2482 2SC2655 2SC4721P</p>	<p>④ 2SC752 2SA562TM 2SA1015 2SC1815 2SC2878 2SC1740S 2SC2120 2SA9335</p>	<p>⑤ 2SA1788</p>
<p>⑥ RN2203 RN2201 RN2004 RN1203 RN1204 RN2204 RN1205 RN1202 RN1201</p>	<p>⑦ 2SD1554 2SD2253 2SD1556 2SC5143 2SD2553</p>	<p>⑧ ON4409</p>		

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**SPECIFICATIONS (Representative: 32Z13B)**

<b>Input Power Rating:</b>	AC 220 ~ 240 Volts				
<b>Aerial Input Impedance:</b>	75 ohm unbalanced type for VHF, UHF and CATV				
<b>Receiving Channels:</b>	<b>System</b>	<b>Channel</b>	<b>VHF</b>	<b>UHF</b>	<b>CATV</b>
	PAL I	UK		21 ~ 69	
	PAL, /60 Hz (For Video Disk play back)				
	4.43 NTSC (For VCR playback), 3.58 NTSC (For VCR playback)				
<b>Intermediate Frequencies:</b>	Picture I-F carrier frequency ..... 38.9 MHz (L VL)				
	Sound I-F carrier frequency ..... 32.9 MHz				
<b>Picture Tube:</b>	32 inches, 760 mm (measured on diagonal of viewable picture area)				
	106° deflection				
<b>Sound Output:</b>	5 W + 5 W (at 10% Distortion, Main)				
<b>Speakers:</b>	60 mm x 120 mm oval, 2 pcs (Main)				
<b>Aux. Terminals:</b>	21 pin socket (FULL), 21 pin socket (S-VIDEO/AV), MONITOR OUTPUT, STEREO HEADPHONE JACK (3.5mm).				
<b>Cabinet:</b>	Table type				
<b>Dimensions:</b>	Height ..... 574 mm				
	Width ..... 918 mm				
	Depth ..... 560 mm				
<b>Mass:</b>	60.0 kg				

\* Please refer to owner's manual in detail.

TOSHIBA CORPORATION  
1-1, SHIBAURA 1-CHOME, MINATO-KU, TOKYO 105-8001, JAPAN